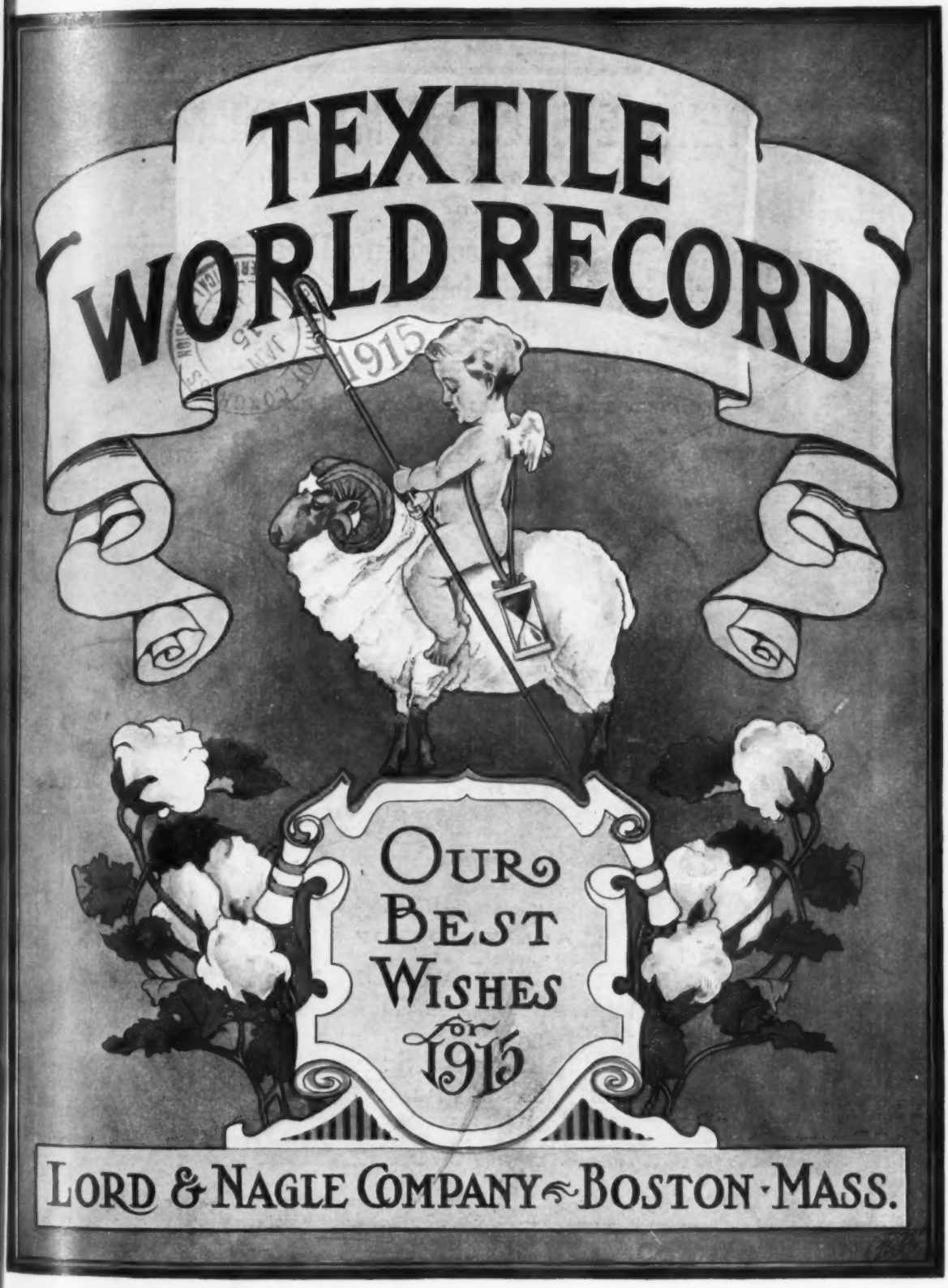
Number 4
Volume XLVIII

JANUARY, 1915

$2.00 per year
$3.00 with Directory



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The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

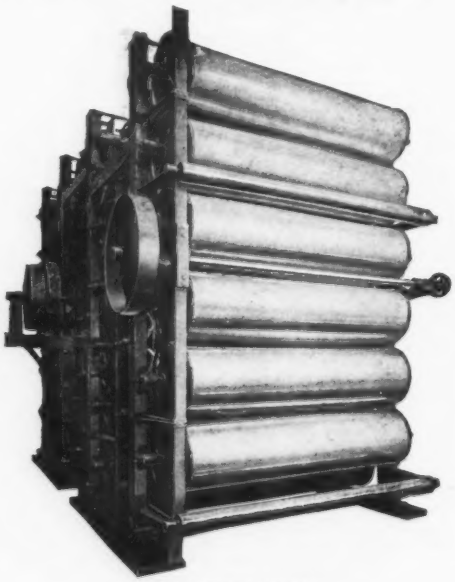
BUILDERS OF

Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

FOR

TEXTILE FABRICS AND WARPS

Plans and Estimates for Complete Plants



Upright Drying Machine

ALL KINDS OF

Horizontal and Upright Drying Machines

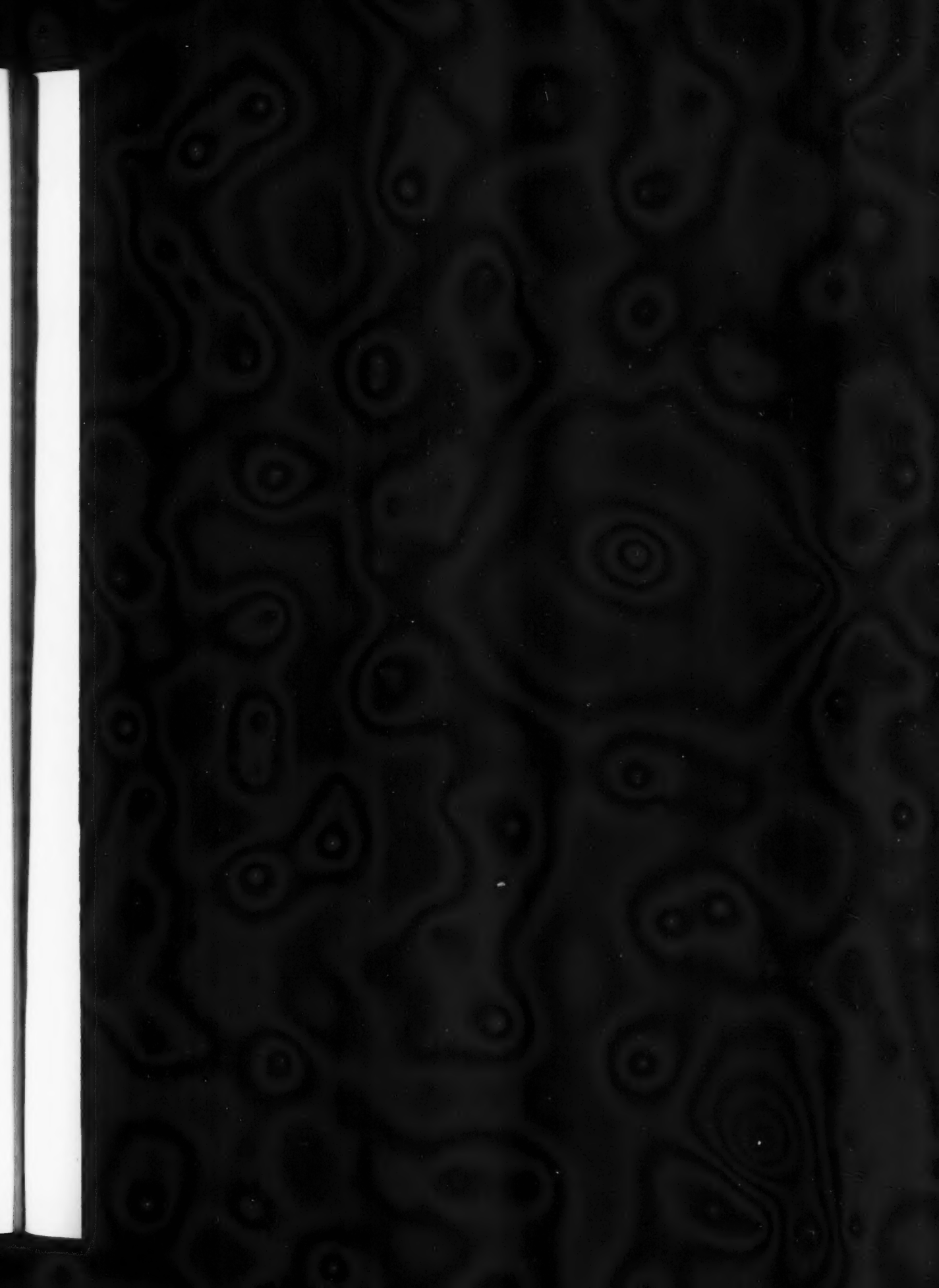
With cylinders made from either the best English tinned iron or best Lake Superior sheet copper, fitted with our

Patent Spiral Scoops

Bleaching Kiers with Patent Circulators

FOR

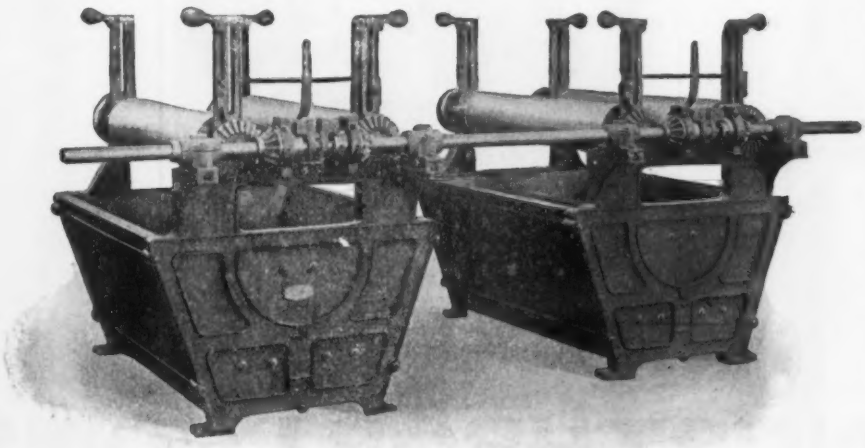
Raw Stock, Yarn, Woven and Knit Goods



H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

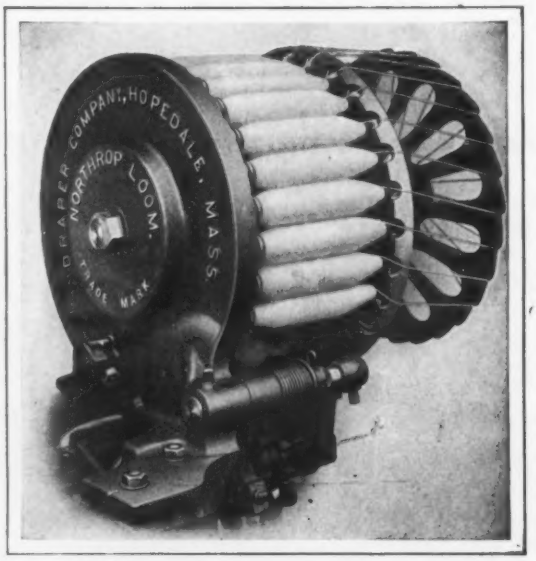
Providence Office, Room 417, Industrial Trust Building.



JIGGER

Bleaching, Drying, Dyeing and Finishing Machinery

for all textile fabrics.



NORTHROP LOOMS

TRADE MARK REGISTERED

INCREASE EARNING CAPACITY OF THE WEAVE ROOM WEAVERS

DRAPER COMPANY

HOPEDALE MASS.

THE BEST

NORTHROP LOOM BOBBINS

AND

SHUTTLES

ARE MADE BY

Northrop Loom Manufacturers

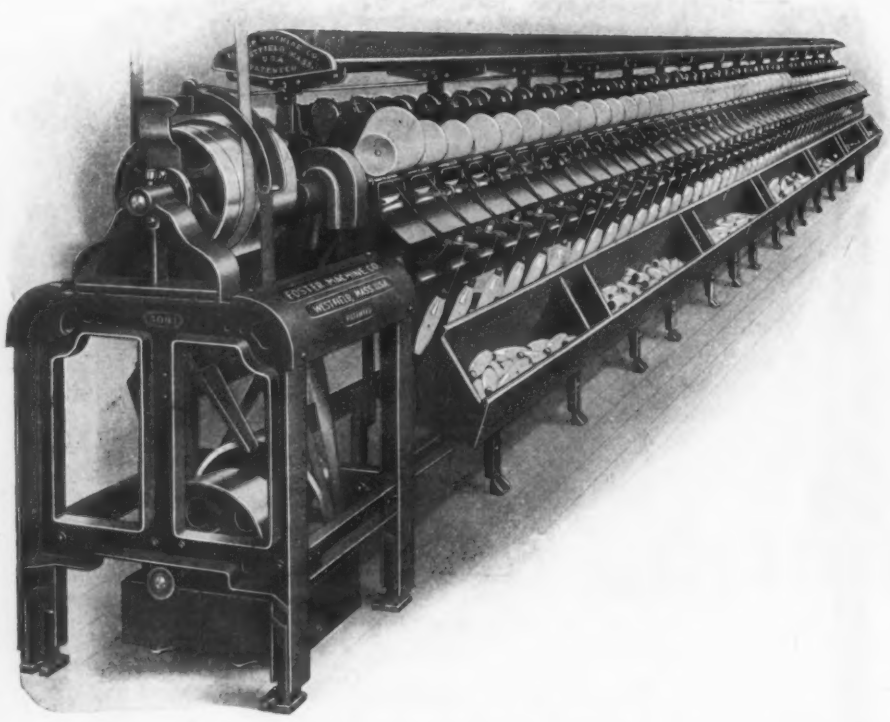
Look for our name on your Bobbins and Shuttles

DRAPER COMPANY

Hopedale Mass.

J. D. CLOUDMAN Southern Agent 40 So. Forsyth St. Atlanta Ga.

The Foster Model 30



The Model 30 Cone Winder has every good principle of former Models incorporated in it. In addition, the new Model is more flexible of adjustment and may be set to produce finished cones of much greater taper than former Models, although paper cones of the same or lesser pitch are used.

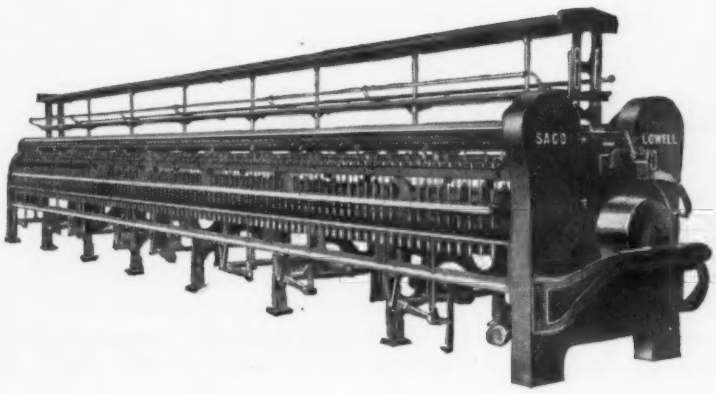
Foster Machine Company

Westfield, Massachusetts

JOHN HILL, Southern Agent, 1014 Healey Bldg., Atlanta, Ga.

Saco-Lowell Shops

TEXTILE MACHINERY



Shops—
Lowell, Mass.
Biddeford, Maine
Newton Upper Falls, Mass.

Executive Offices—
77 Franklin Street
Boston, Mass.

Southern Agent, ROGERS W. DAVIS,
Charlotte, N. C.

COMPLETE COTTON MILL EQUIPMENT
Including:
Pickers
Cards
Drawing
Evener Drawing
Roving
Spinning
Twisters
Slashers
Spoolers
Reels
Winders
Warpers
Looms

WASTE RECLAIMING MACHINERY

WORSTED MACHINERY
Including:
Revolving Creels,
Gill Boxes
Drawing Frames,
Reducing and Roving Frames,
Cap Ring and Flyer Spinning and Twisting Frames
Jack Spoolers

Utilizing Cotton Waste

PROBABLY not in the history of the United States has there been a better opportunity than at the present time for the use of the Barchant System for working up low grade cotton and cotton waste.

Few manufacturers realize what a variety and excellent quality of goods can be produced from comparatively low grades of waste on

Platt's Patent Barchant Machinery

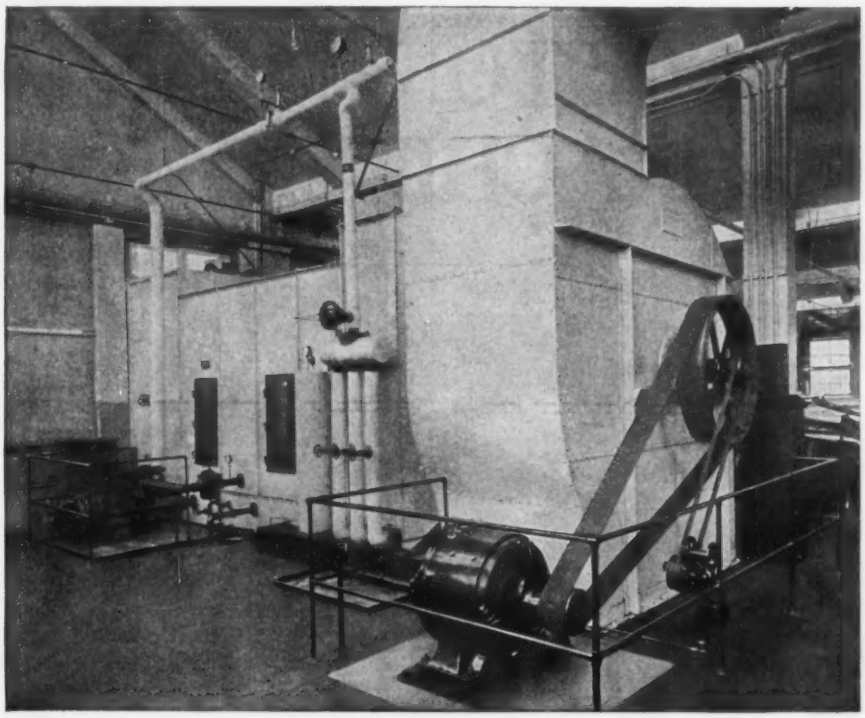
which has been specially designed for the production of the highest grade of yarns for use in the manufacture of imitation woolen blankets, robes, Mackinaw cloth and low count knitting yarns, etc.

Up to now this class of trade has been largely monopolized by the Germans where practically all the leading firms producing these goods have Platt's Barchant Machinery, but with German competition now entirely eliminated—probably for several years—and the mills in England equipped with Platt's Barchant Machinery working to their fullest capacity, (largely on army and hospital work for the British Government,) there is every opportunity for manufacturers here to go into this class of trade.

As sole representatives in the United States and Canada for Messrs. Platt Brothers, who are the makers of the Barchant System, we are prepared to completely equip plants and give full information in connection with their operation.

Leigh & Butler

232 Summer Street, Boston, Mass.



How About Cold Weather?

On cold winter mornings it is often necessary to heat the water used in the humidifier. The Carrier water heater is built on the ejector principle, designed to operate without noise.

It is simple, compact, and the most efficient device for heating water.

With the Carrier Automatic Control the temperature is never raised above that required to give the results, so there can be no waste of steam.

Carrier Air Conditioning Co.

Of America

OF AMERICA

No. 39 Cortlandt Street, New York City

NEW ENGLAND
176 Federal Street
Boston

CHICAGO
Ft. Dearborn Bldg.
Clark and Monroe Sts.

BUFFALO, 490 Broadway

PHILADELPHIA
734 Real Estate Trust
Bldg.

COTTON MILL MACHINERY

Carding Spinning

MASON MACHINE WORKS

Drawing Weaving

Executive Office, 77 Franklin Street, Boston, Mass.
Arthur R. Sharp, Treas.; Thomas G. Cox, Agent

Southern Office, Greenville, S. C., Edwin Howard

Works at Taunton, Mass.

The cream of the textile industry uses "Barreled Sunlight" in their plants

Test it out yourself under our Guarantee

YOU can easily prove to yourself that Rice's Gloss Mill-White will give 19% to 36% more daylight; will save you money, in making repainting less frequent; will not crack or scale; and will be more sanitary.

Apply Rice's in a section of your plant, where a fair comparison can be made with the interior finish you now use.

It Stays White Longest

RICE'S Gloss Mill-White is the original "mill white." All others are imitations. It is the *only* mill white which contains no varnish. For that reason we *guarantee* that if Rice's does not remain white longer than any other gloss paint—applied at the same time and under the same conditions—*we will give free enough Rice's to repaint the job with one coat.* We also guarantee that, properly applied, Rice's will not flake or scale. You cannot lose under this guarantee.

On concrete surfaces

On inside concrete, Rice's Granolith makes the best possible primer for a second coat of Rice's Gloss Mill-White—giving a tile-like enamel finish at no more expense than lead and oil paint.

Rice's Granolith

Can be applied over cold water paint

Hundreds of factories where cold-water paint was formerly used have thus been treated with Rice's Mill White and the flaking and scaling nuisance permanently obviated. Not only has a durable surface thus been produced, but a tile-like smooth finish which can be kept clean and which also reflects light and WILL NOT SCALE.

Over 3,000 firms use and praise this interior finish.

Sold Direct—Write us for Booklet and Sample Board

Sold direct from our factory in barrels containing sufficient paint to cover 20,000 square feet—one coat.

United States Gutta Percha Paint Co.

20 DUDLEY ST., PROVIDENCE, R. I.

Parks' Piping Parables

Anno Domini 1914 Is Done

Let us hope that from now till man shall be no more, there will never be another like it. A year of pure, unadulterated cussedness is past.

Let's forget it.

I want to be the means, if I can, of inducing you to hold fast to a New Year's Resolution—I assume that you included it in your list—it is very close to me—*"Don't prejudge a Contractor on account of his price, and don't assume after seeing a good thing and hearing its price that another is just as good.*

That is what a friend of ours did—yes he is a friend even if he didn't give us his work. The only criticism of our friend is that he doesn't know any more about the piping business or his own piping requirements than I do about preaching the gospel.

Our friend was about to install four boilers, two engines, and a lot of contemporaneous plunder—meaning piping.

I am not going to give all the details—only the gist of the matter.

We figured two valves in the boilers where one would cover the Mass. law, valves to shut off auxiliaries in case of emergencies, two Warren pumps either one large enough to feed five boilers, 1000 H. P. feed water heater, four inch brass pipe which costs quite a gob of money but which we feel is cheaper in the long run, twelve inch steam header, and a Parko receiver.

All these plans were approved by the man who held the wallet, and the G. M. Parks Co. submitted a price.

Someone (a reputable firm no doubt) sold them a job that our friend thought just as good as ours and about $700.00 less than our price.

Mr. Customer's conclusion from the evidence he had, was that we were holding him up.

Well, I've seen the job that was to be *just as good as ours!* It's too bad that the inexperienced who have to buy piping can't take a course of instruction in piping values.

I wouldn't want to crawl into one of those boilers with only one valve between me and certain death.

The feed water temperature may be high enough—maybe,—there is no thermometer. The feed water capacity is 600 Boiler H. P.

The feed pipe is not 4" brass—it is 3" iron and has been repaired already.

The pumps are quite a bit smaller than we would have furnished and should one be shut down for repairs the other would have to go some to keep ahead of four boilers.

What's going to happen when a fifth boiler is installed?

When I discussed the plan, these matters were mentioned and I explained how the job could be cheapened.

It's queer how a fellow can assume that one thing is as good as another after seeing the good one and learning the price.

To do our friend justice, I really believe that he thought he was getting something as good as we offered for $700.00 less.

Said we were trying to stick him or didn't know how to figure.

Well, he's had the job a year now, and thinks better of us and he tries to be temperate in his remarks about the fellow that took the contract.

He knows that if he had insisted upon my scheme from the other fellow, there wouldn't have been $700.00 difference, but possibly a difference the other way.

He's sorry we didn't get his order, but that doesn't do either of us any good. The job won't be done again and we've got to look for some one that either knows what he's buying or will take counsel.

Our platform is to lay out your piping requirements as if we were doing it for ourselves:—we're going to run the job ourselves—we're going to father it; to summer and winter it; to live with it.

So I repeat. I hope you made a New Year's resolution—"do not prejudge by price." If you didn't make one—make it NOW. For very possibly the contractor whose price is lowest is sticking you the hardest.

Our aim is to build up a service station—a clearing house for piping information and problems.

If we really give the service; if we really command the information; if we really solve the problem, we can't do it and be honest with ourselves—and you—on any other than a lasting basis.

And it is by charging a legimate profit that we can maintain an organization to do these things for you—as when and if needed.

Anno Domini 1914 is done. God spare us from another like it.

PARKO

The G. M. Parks Company, Fitchburg, Massachusetts

An Investment
Not an Expense

YOU buy some of your mill equipment in order to effect improvements and sometimes this means expense without paying a profit.

It is not so with the Turbo equipment for if your mill is "Turbofied" you will be satisfied in at least two ways:—

(a) It will properly humidify your mill, making it easily possible to increase both the quantity and the quality of your mill's output—consequently decreasing the number of seconds and the resulting financial loss.

(b) The natural moisture contained in cotton evaporates in every process from the opening room to the finishing room and the stock loses weight. As a result you lose money unless the proper proportion of moisture is restored to the goods, whether yarn or cloth.

In some yarn mills it is possible to save just in the added weight the complete cost of a Turbo system in less than a year's time.

These are not mere claims, but facts, the truth of which will be demonstrated on request, either by means of the Turbo Humidifier Catalog or through one of our Engineers.

Which one shall we send you? Or shall we send both?

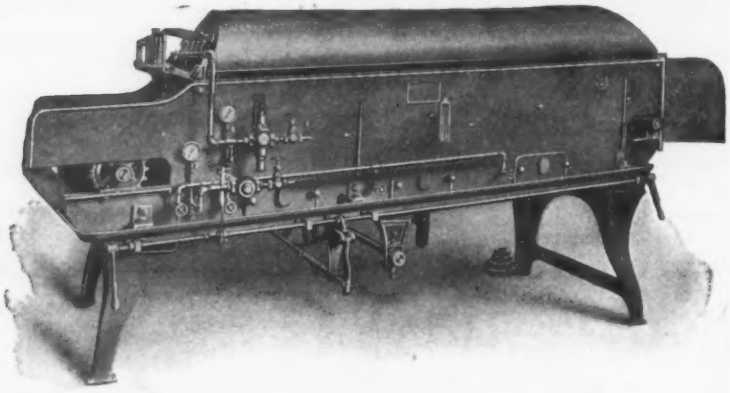
The G. M. Parks Company

Fitchburg, Mass.

Southern Office, 200 Commercial Bank Building, Charlotte, N. C. **J. S. COTHRAN, Mgr.**

The Yarn Conditioning Machine

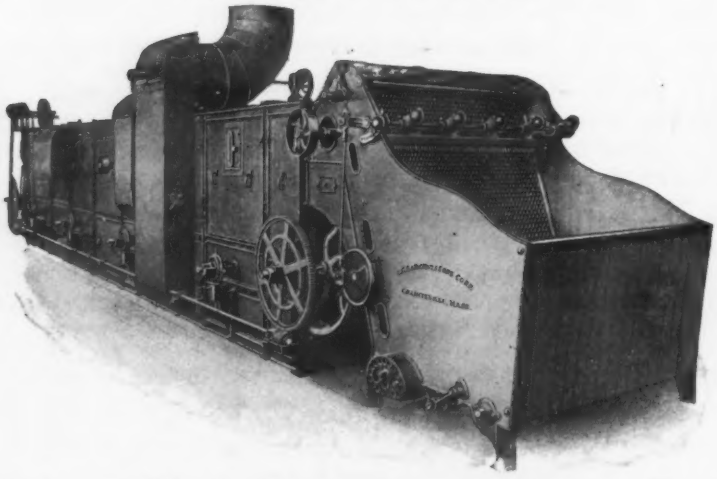
Sets the twist in your filling and overcomes kinky filling difficulties. It conditions without injuring the bobbins



The Sargent Drying Machines

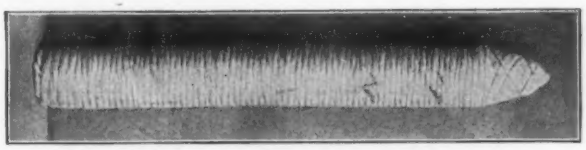
Metal Construction
Asbestos Insulation

Scientifically designed for greatest economy in drying Cotton, Wool, Hair.



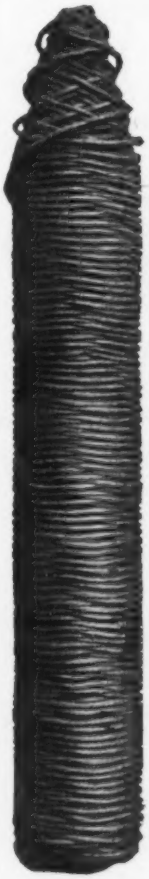
Wool Washers, Wool Dusters and Openers, Burr Pickers
Complete Carbonizing Plants
Automatic Feeds for Cotton and Wool

C. G. Sargent's Sons Corp., Graniteville, Mass.



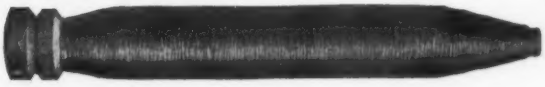
No. 2

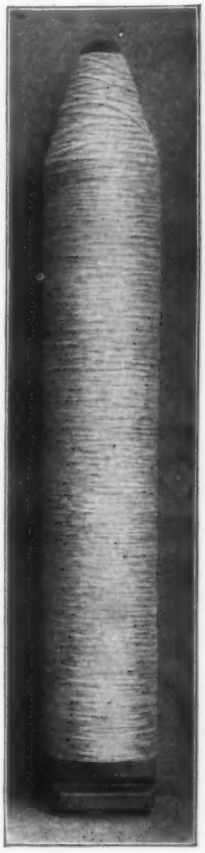
No. 1 and No. 2—Cops to weave from inside seven-eighths to three inches diameter and up to seventeen inches long.



Suitable for various kinds of coarse goods such as grass matting, cotton bagging, cocoa matting, all kinds of carpets, felts, chinchilla, linen, jute, flax, asbestos, hose and narrow fabrics such as wicks, belting, webbing, surcingles, halters, etc.

No. 3 and No. 4 Shuttle Bobbins from seven-eighths to two inches in diameter and any length up to twelve inches. Suitable for all kinds of duck, upholsteries, tapestries, asbestos, ratana or any kind of fancy yarns for automatic or other looms.





No. 1 No. 4 No. 3

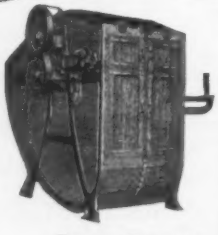
OSWALD LEVER CO., Inc.

Lehigh Avenue and Front Street, Philadelphia, Pa.

Builders of Textile Machinery WINDERS ESPECIALLY

The Hunter

NO. 10
FULLING
MILL



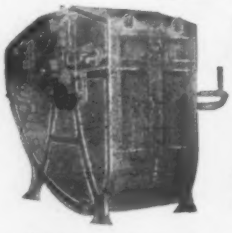
DRIVING SIDE

GEAR DRIVE

CLOTH WASHERS

PEICE DYE
KETTLES

SOAPING
MACHINES



BELT DRIVE

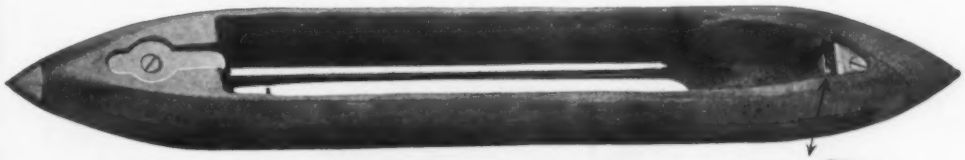
ROPE DRIVE

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

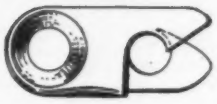
New Hand-Threading Shuttle

The Caron Patent Hand Threader



This "THROAT PLATE" (slightly enlarged) is so designed that the Yarn *cannot "Balloon"*

This "SIDE EYE" (slightly enlarged), made in two parts, *prevents unthreading.*



The Simplest and Most Quickly Threaded Shuttle Made

It can be filled with the finest silk or the coarsest filling—will neither *unthread* nor "*balloon*"—lint that accumulates is easily removed—felt can be inserted for tension purposes—and being a hand-threading shuttle, it is sanitary.

This shuttle is entirely different from all others. It has been severely tested for a year by large mills and is the most effective hand threader on the market.

Trial orders solicited—Satisfaction guaranteed

Paper Cop Tubes Cones and Shells

Send your samples and we will quote prices on any lot desired

Shuttles and Shuttle Irons

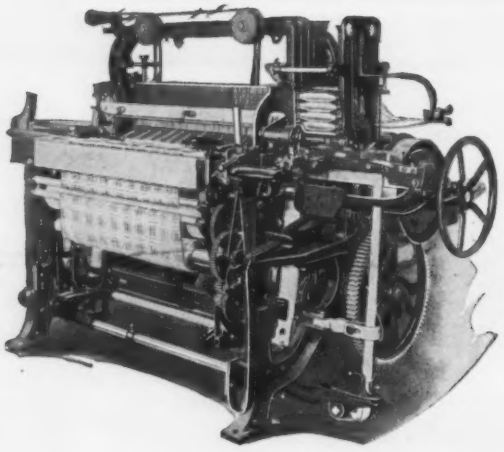
For All Textile Purposes

American Textile Specialty Machinery Co.

670 Eddy Street - Providence, R. I.

13th St. and Boulevard, Long Island City

Crompton & Knowles Loom Works



Automatic Gingham Looms

One of our latest productions for weaving goods of two or more colors in the filling. Like every loom we build, it has the advantage of a successful mill test.

WORCESTER, MASS.

Providence, R. I. **Philadelphia, Pa.**

Southern representative, ALEXANDER & GARSED, Charlotte, N. C.

ECONOMY AND SAFETY

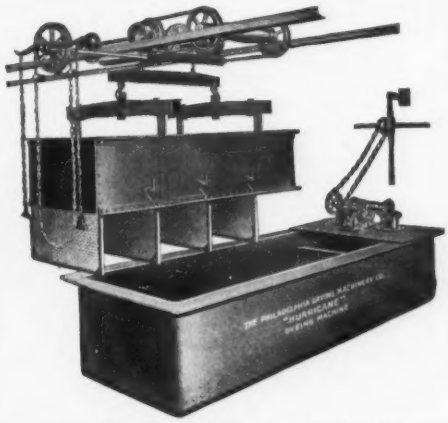
YOU GET BOTH WITH

"Hurricane" Machinery

FOR

HOSIERY
SKEIN
YARN
SLUBBING
etc.

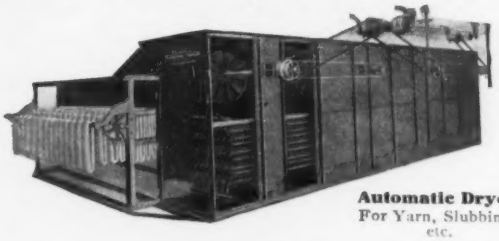
The best and mosteconomical Dyeing Machines



BETTER DYEING at LESS EXPENSE

Give us an opportunity to prove our claims

"Hurricane" Circulating Dyeing Machines are built in various sizes and types



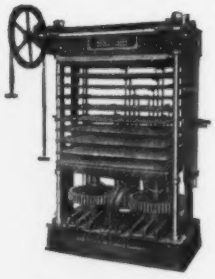
Automatic Dryer
For Yarn, Slubbing, etc.

Complete Equipments for

Dyeing
Scouring
Bleaching
Carbonizing

FIRE-PROOF DRYERS

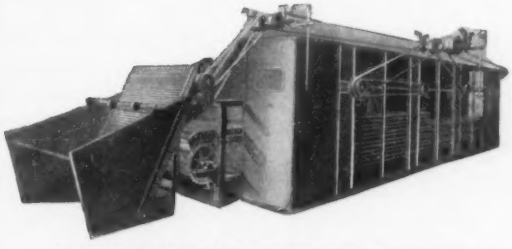
STEEL CONSTRUCTION
INSULATED WITH ASBESTOS



Power-Screw and Hydraulic
PRESSES

Fans

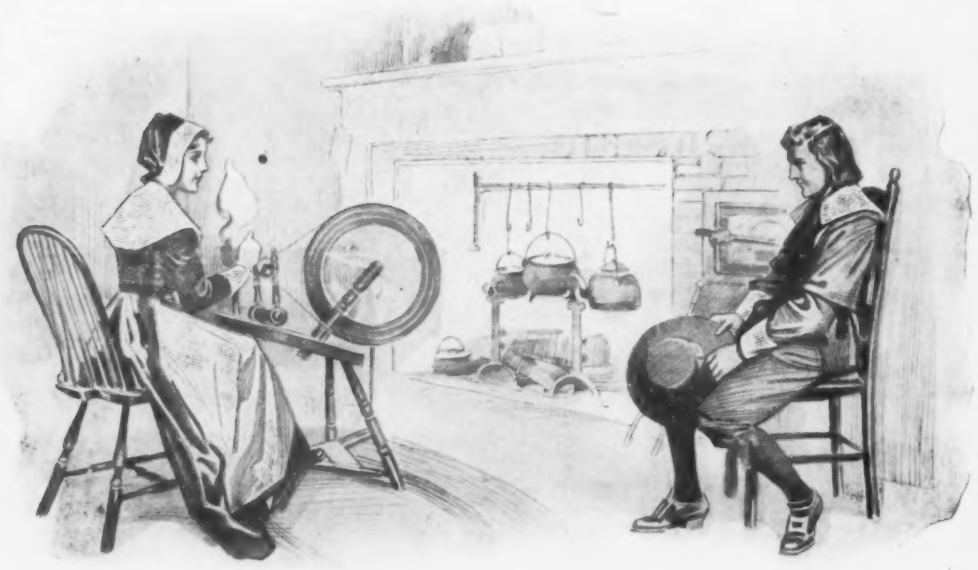
Motor and Belt Driven



AUTOMATIC STOCK DRYER
(With Sectional-Continuous Conveyor)
For Cotton, Wool, Hair, Rags, etc.

THE PHILADELPHIA DRYING MACHINERY CO.

Main Office and Works: 6721 Germantown Ave., Phila., Pa. **Boston Office: 53 State Street**



It's a Long Way

from the whir of the primitive spinning wheel by the crackling log fire, to the great textile machines of to-day,—machines representing notable inventive genius and diligent application to the needs of the industry.

We believe that the improvements and refinements we may have contributed to the progress of the textile industry have been attained by specializing in separate organizations upon our various lines of machinery.

POTTER & JOHNSTON MACHINE COMPANY
Pickers and Revolving Flat Cards

WOONSOCKET MACHINE & PRESS COMPANY
Roving and Drawing Frames

FALES & JENKS MACHINE COMPANY
Ring Spinning and Twisting Frames

EASTON & BURNHAM MACHINE COMPANY
Spoolers, Reels and Spindles

Northern Representatives
Manufacturers Equipment Company
136 Federal Street - Boston, Mass.

Southern Representative
J. H. Mayes
Independence Building, Charlotte, N. C.

FIG.20.

Oblong Style

Heavy, strong cotton duck. Leather binding. Full length frame pockets. Handles securely fastened. Renewable hardwood shoes. Made also with iron shoes (Fig. 38) dragged but little.

Lane Canvas Mill Baskets

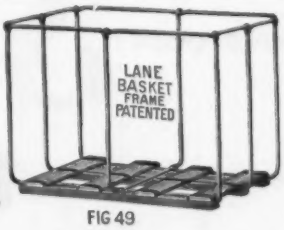


FIG 49

Lane Basket Frame

Round spring steel. Uprights fastened to hoop by *flexible eyejoints*, guaranteed against breakage. Light and exceedingly strong.

Boxes and Trucks

Essentially

Profit Makers

Lane	*Others*
Smooth, flexible surfaces	Nails, splinters, unyielding
ELIMINATE WASTE	**MAKE WASTE**
Light Weight	Heavy and Clumsy
GREATER HELP EFFICIENCY	**UNNECESSARY FATIGUE**
Life measured by years	Their days are numbered
LOW ULTIMATE COST	**HIGH YEARLY EXPENSE**

Why not line up in the Lane Column?

FIG.27

Lane Truck

Made as shown, or *with Duck Partition*. Mounted on stationary frame casters, with *thread guards*, as above, or on swivel frame casters.

"A Style for every use"

Write for Catalog and Prices

W. T. Lane & Bro.

Manufacturers

Poughkeepsie, N.Y.

FIG.22.

Round Taper

Materials and constuction same as Fig. 20. Made also with iron shoes (Fig. 38) if desired.

Starch

THE particular case of your own mill needs careful study to determine what starch is best suited to *your* SIZING and FINISHING problems.

We have reduced the manufacture of starches for textile work to a science by years of factory investigation and laboratory research. We are ready to take up the special case of your mill and point out to you what starches are most adaptable and reliable for your purposes.

Six years of careful investigation of conditions in the cotton mills of the country has taught us the needs of the trade.

Six years' research in the best equipped Starch Laboratory in America has put us in touch with starch chemistry.

Six years of manufacturing, with cotton mill problems in mind, has produced our special Brands of Textile Starches.

We want to send our special starch expert to your mill. We want him to go into the matter of sizing with your boss of slashing—check up your sizing processes—find out whether you are now using the starches that will insure you the most efficient and economical results.

This special starch expert service is absolutely free—send us a sample of the starches you are using. We will give you an exact analysis of them and send our practical man to study your needs. Write a letter now to our Mill Starch Department.

Corn Products Refining Company
NEW YORK

Starch

Westinghouse Electric Type CS Four Frame Motor

WITHOUT doubt, the most satisfactory four-frame motor ever produced.

Bearings and shaft are extra heavy.

Forged steel frame and feet insure great strength with minimum weight.

Rotor practically indestructible.

No ventilating ducts in the cores.

Efficiency unusually high.

Air gap very large.

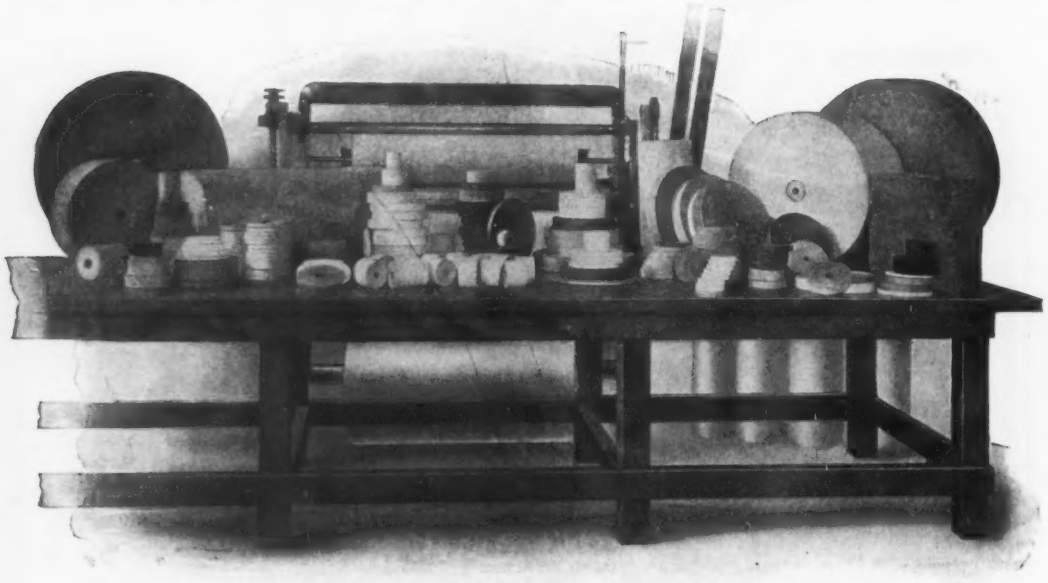
Stator coils are form wound and laid in open slots.

Send for full particulars.

Westinghouse Electric & Mfg. Company

EAST PITTSBURGH, PA.

Boston **Philadelphia** **Atlanta**
New York **Charlotte**



Specimens of Rolls, large and small, produced by

Cameron Slitting and Rewinding Machine

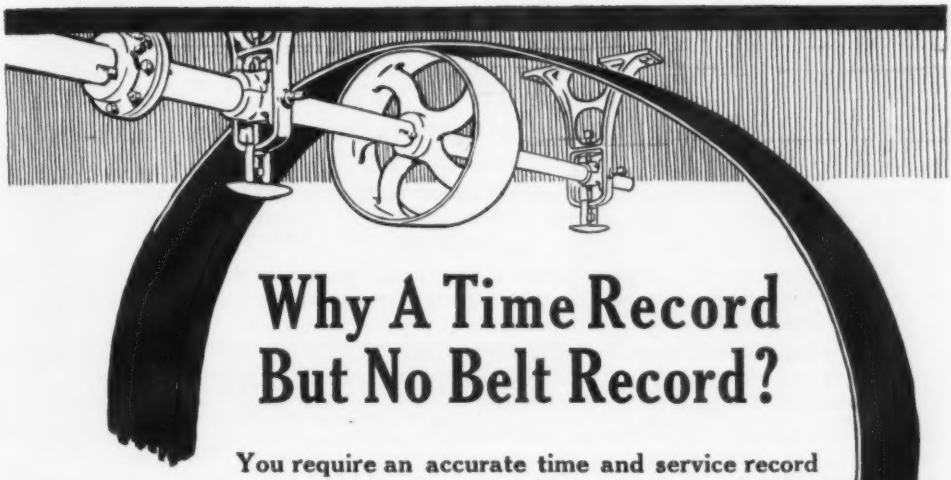
(UNIVERSAL TYPE)

Correspondence is invited relative to all problems involving a *rolling up process* or any operation where fabric or other material is split into narrower widths and rolled up into coils.

Perfect Rolls are *impossible* by *old style Rolling Up Machines.* Let us make some suggestions.

Cameron Machine Company

57-61 Poplar St., Brooklyn, New York



Why A Time Record But No Belt Record?

You require an accurate time and service record from each employee — why not from your belts?

IT IS JUST AS IMPORTANT.

The "G. & K." Belt Record System gives an accurate time and service record of every belt in your plant. It is a dead sure check on just what your belts are doing—it "shows up" every belt that "sojers" on the job.

Do not tolerate inferior or incapable belts, check up the "laggards," use the "G. & K." Belt Record System, it is absolutely free. Consult us.

WHAT THE SYSTEM IS

The "G. & K." Belt Record System shows at a glance the complete history of each belt in your plant — the maker's name, brand of belt, width, length, purchase date, initial cost, on what machine installed, repair cost, in short it is the most comprehensive yet simplest system of its kind and adapted to every plant, large or small.

Remember that a systematic record of your belts is the only means you have of comparing the results of various belts. We welcome comparative tests, they will convince you of the large saving possible by the use of our modern efficient product.

The Coupon or your letterhead gets you further particulars by return mail. Write us.

The Graton & Knight Mfg. Co.

Oak Leather Tanners and Belt Makers

WORCESTER, MASS., U. S. A.

BRANCHES

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Boston	Milwaukee	Pittsburgh
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Cleveland	Minneapolis	San Francisco
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Fall River	New Orleans	St. Louis

Selling Agents for Texas

The Graton & Knight Mfg. Co. of Texas

Dallas, Texas

G&K

COUPON

The Graton & Knight Mfg. Co.

T.W.R. 1-15 **Worcester, Mass., U.S.A.**

GENTLEMEN:

Send me full particulars regarding your Belt Record System. It is understood that this service is gratis.

Name .....

Address .....

.....

Position .....

Company .....

.....

Stop the Leaks!

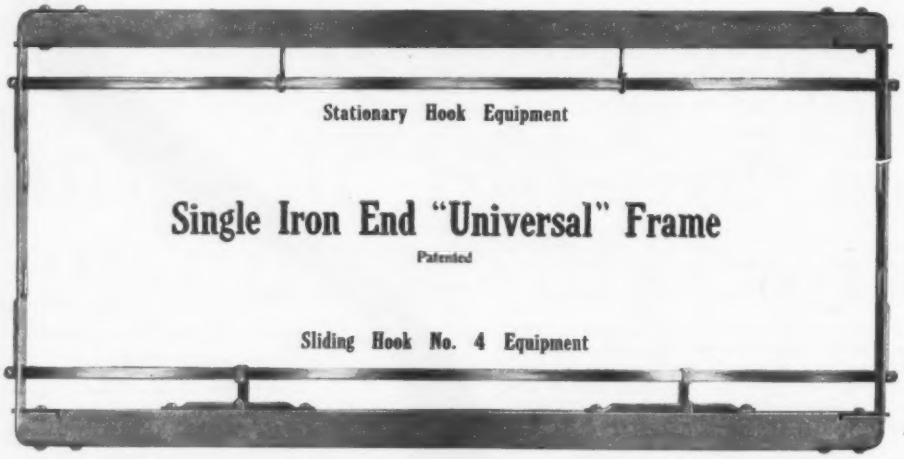
Do you realize what all those little loom leaks amount to in the course of a year?

IT takes only a second or so to pull out a twisted heddle—a minute or so to readjust your frame—a minute of attention on the part of operators. Just minutes, that's all—but in a year those minutes will amount to days and weeks.

Nor is this waste the only terrific expense. Figure too that the old wire harness—the frames that looked cheaper on the invoice—are constantly wearing out and that they invariably go to the scrap heap long before they have begun to pay for themselves.

It was these little, sneaky wastes of weaving that have induced hundreds upon hundreds of textile mills in every country in the civilized world to equip with Steel Heddles and Universal Frames.

Take the Universal Iron end Frame. Here is a frame you can use to the extreme width of the loom. The wood used is fully seasoned—free from knots—clean fibred and pre-shrunk. It is so built that it can be dismantled in a few seconds. Has no protruding parts to catch or hold or rub other frames in weaving.



The Universal Frame is built for service—for efficiency—for durability. There isn't a cheap splinter in it. It was built for the man who wants real economy—not the fake economy of an original low price.

You can have Universal Frames built to suit your own ideas—to fit the peculiar conditions of your mill and your product.

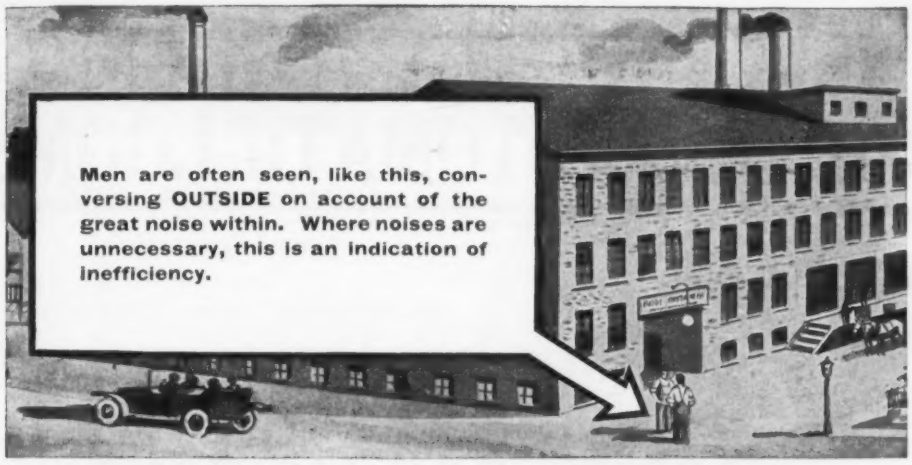
We'll prove the importance of the Steel Heddle Equipment to you. Write us a letter, tell us the particular kind of goods you are making; the length of the heddle and the width of the frame, and we'll show what it will cost to equip that Mill with Steel Heddle Equipment.

We'll send you a sample frame—made up—ready to run—on your kind of work. Study this frame when you get it. You'll be surprised at result.

Steel Heddle Manufacturing Company

21st and Allegheny Avenue, Philadelphia, Pa.

Providence Office - - - 76 Dorrance Street


Men are often seen, like this, conversing OUTSIDE on account of the great noise within. Where noises are unnecessary, this is an indication of inefficiency.

Noise Is Not Regarded Seriously Enough

"It is difficult to understand why quietness of machine operation does not receive more attention.

"Not infrequently the foreman of a noisy shop beckons a man into a private room, or other quiet place where both can converse more readily. During the conversation the workman's machine lies idle. Definite, distinct instruction is an essential to efficient management. It is not bad practice, then, to call a man away from his work, for a few moments where noise is unavoidable. But where the noise is preventable, it should be prevented. The workman can then continue his work while conversing with the foreman, and time would not be lost in running in and out.

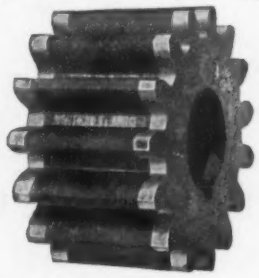
"Not only is good fellowship enhanced, quantity increased, and quality improved in this manner, but the efficiency of the machine that has been quieted is generally improved. History tells us that the first steam engine was the embodiment of noise; the first gas engine was even worse; the first locomotive was by no means quiet, nor was Fulton's steamboat quiet. In every instance increase in efficiency has accompanied reduction in noise."—*From an article on factory noises by W. F. Schaphorst, June 14, 1914, Iron Age.*

Perhaps the most prevalent—surely the least excusable—factory noises are the *gear noises* which can be readily overcome by using

NEW PROCESS NOISELESS PINIONS

Numerous performance records indicate that, in addition to quiet running and protective influence against gear breakage and vibration troubles, these pinions often outwear metal pinions and in the long run actually cost less.

Our book "Noiseless Gear Driving" is filled with pointers from which you might profit. Ask for your copy.

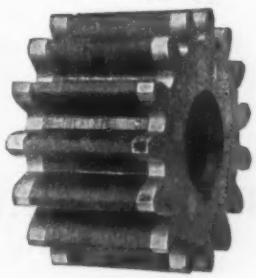


N.P.R.H.

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

NEW PROCESS GEAR CORPORATION

SYRACUSE, N. Y.



Canadian Agents Robert Gardner & Son, Ltd., Montreal

102

"IDEAL" AUTOMATIC LOOMS

SILK LOOMS

DOBBIES, BOX MOTIONS

TEMPLES

FANCY WEAVING MOTIONS

THE STAFFORD COMPANY

READVILLE, MASS.

FRED H. WHITE Southern Agent CHARLOTTE, N. C.

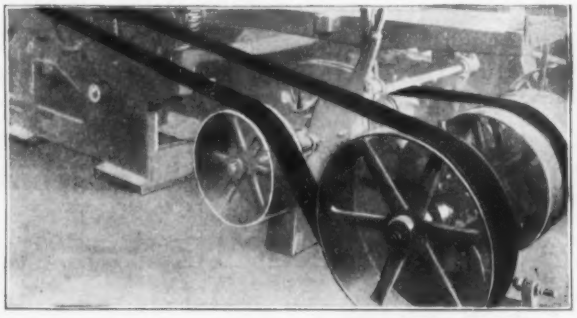
Belts for Fast, Sure Work

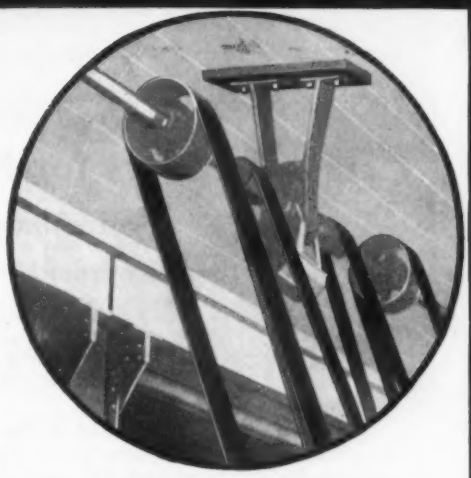
Spin and Weave All the Time

Machines must "hum" without a let-up in the textile mill. Delays are costly in time, labor and output. Belts that slip or break don't pay.

For every exacting purpose in the textile mill there is just the Goodyear belt. Belting problems have been studied from your standpoint. That's why Goodyear belts stand the grind of high speeds and small pulley machinery.

GOODYEAR
AKRON, OHIO
Textile Mill Belting





"Jove" for High Speeds

The flexible belt of hard weave fabric and fine Para rubber. Hugs the small pulley tightly at all times. The stretch is taken out in the making—no shut-downs to readjust belting. It is the belt for hard work.

"Klingtite" for Power

A transmission belt for good-sized pulleys. Won't slip, stretch or sag. A high grade belt with a fine friction surface and great pulling power.

Ask Us Your Belt Questions

Put your belt troubles up to the Goodyear advisors. No obligation to ask questions. Whatever your needs in belting, packing or valves, Goodyear can best meet them. Remember that Goodyear dominates in this field as in Tiredom. Write today for Book on Belting. Address Desk 80

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio
Makers of Goodyear No-Rim-Cut Automobile Tires

Don't Worry About Dyestuffs

Bleach Your Stockings

WE ARE

Headquarters for Bleaching Equipment

Machines in All Sizes

Capacity from 50 to 500 lbs. per batch.

For detailed information address Dept. H. of

SMITH, DRUM & COMPANY

"Builders of the Best" Labor Saving Devices

Coral and Cumberland Streets - - Philadelphia, Pa.

Cut it—Don't Fan the air

You eat up power running pulleys whose arms ***beat*** the air.
You save correspondingly by using

"American" STEEL SPLIT Pulleys

WHOSE

Arms *cut* the air

See it experimentally demonstrated at

4200 Wissahickon Avenue, - Philadelphia

THE AMERICAN PULLEY COMPANY

124 S. Clinton St., Chicago
33 Greene St., New York
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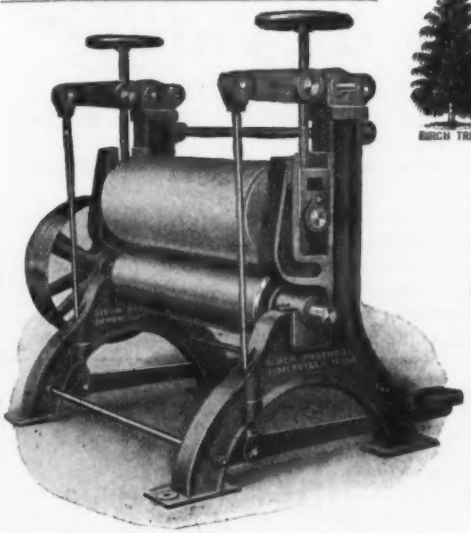
BIRCH BROTHERS

ALBERT BIRCH, TEXTILE MECHANICIAN

SOMERVILLE, MASS.



Starch Mangle.—This is the two-roll machine, with brass and rubber rolls. Mangles built with rollers of any material or number desired. Send for circular.

BIRCH TREE

"Coronation"

Piece-End

Sewing Machine

Sent on trial most anywhere

Sews any fabric, thick or thin, wet or dry, without change

Fine Stitch or Coarse Stitch

Send for Circular

Also Makers of

Dyeing and Finishing Machinery

Scutchers, Openers, Folders, Crabbing and Soaping Machinery

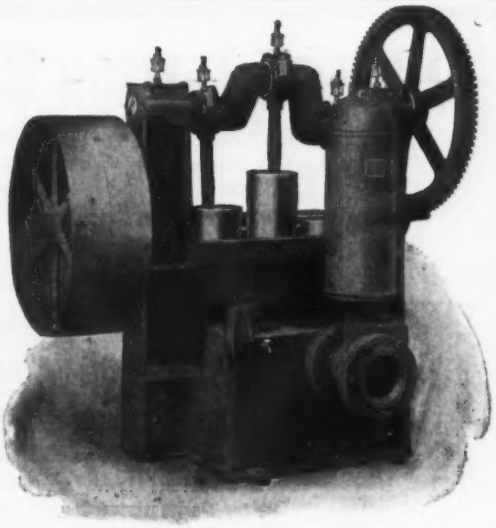
GOULDS PUMPS

For Textile Mills, Bleacheries and Dye Houses

Used by many of the country's biggest and best known mills.

Every Goulds Pump sold is backed by our guarantee to operate satisfactorily under the conditions for which it is recommended.

Write our nearest office for complete set of Bulletins



Gould Fig. 957 Single Acting Triplex Plunger Pump for Tank Pumping in Mills, Bleacheries and Dye Houses

THE GOULDS MANUFACTURING COMPANY

Main Office and Works: SENECA FALLS, N. Y.

Branch Houses: BOSTON NEW YORK CHICAGO HOUSTON

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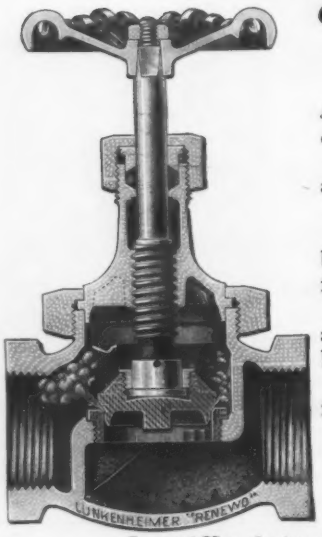

"Renewo Valves"

"The sum total of all good features in valve construction discovered and developed in over half a century of valve manufacture."

All parts renewable, including the NICKEL SEAT and DISC.

Seating surfaces regrindable.

Lunkenheimer "seat-guard,"—the tubular extension on bottom of disc,—materially aids in preserving the seating-faces and keeping them clean.

Body and trimmings (except disc, seat and handwheel) are made of the genuine and original Lunkenheimer steam bronze.

Lunkenheimer **"Renewo" booklet** gives details. Write for a copy.

Sold by leading supply houses everywhere.

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"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World

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MAKERS OF MACHINERY FOR PREPARING AND SPINNING FLAX, HEMP, TOW AND JUTE,
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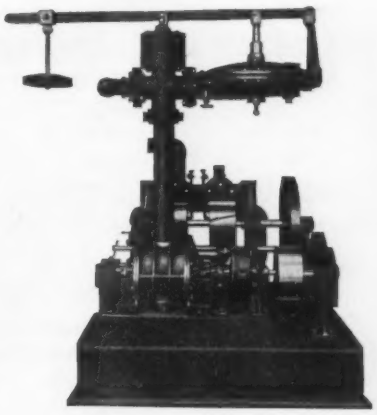
SOLE MAKERS OF
The Patent Centrifugal Flyer Cop Dry Spinning Frame
For Spinning Cops on the Bare Spindle.

ALSO MAKERS OF
ENGINEERS' GENERAL TOOLS for RAILWAY and ORDNANCE PURPOSES, &c., STEAM ENGINES, GROOVED ROPE PULLEYS, SHAFTING, &c.

COMPLETE PLANS AND ESTIMATES FOR SPINNING AND WEAVING MILLS SUPPLIED.

THE

Kemp Automatic Gas System



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Saving in Fuel

GUARANTEED

Usually saves from 50% to 75%

Manufactured or Natural Gas used in the most efficient and economical manner for all industrial purposes.

Heats the surface or parts by the direct application or contact method. Perfect temperature control, intense and uniform heat without soot or odor.

Consult us about your Calender Heating or Singeing Problems

THE C.M. KEMP MFG. CO.

405-413 E. OLIVER STREET

BALTIMORE, MD.

Announcement

We expect to have off the press this month our first catalogue of TEXTILE PRINTING MACHINERY. It is our desire to put this book into the hands of everyone who has an interest in this particular branch of the textile industry, and we have tried to make our mailing list a complete one.

If you do not receive your copy, write us—or, better still, write us now and be sure of getting a catalogue upon publication.

Rice, Barton & Fales Machine and Iron Company

Worcester, - Massachusetts

Statement by a prominent Cotton Mill Executive:

"I Want My Payroll Compiled By My Own Men in My Own Way From the Time Shown By Some Modern Time Recording Instrument."

This statement shows the changed attitude of many textile executives toward the important question of time keeping.

We can show ***you*** why the yardage turned out by your looms does not prove the time the attendant arrived and left the mill. A careful analysis of time keeping has proven in many instances in courts, labor troubles and in all conditions under which labor is employed, the wisdom and the economy of having a reliable record of the arrival and departure of all classes and kinds of labor, no matter what the condition they are employed under so long as you pay for that time. History has proven the unreliability of records taken by a human time keeper. We have encountered many reasons why it is unreliable.

We have made a special study of time-keeping conditions in textile mills and solicit the opportunity of showing you how you can use International Time Recorders to your decided advantage.

The New International Dey Register—Fully Automatic

Registers "regular time in green; "irregular" time—(late arrivals and early departures) in red.

The weekly dial sheet is in the form of a payroll ledger sheet and serves every purpose of a regular payroll ledger. The help can be paid directly from the mechanically recorded time without re-writing into books. Wonderful saver of clerical time in making up payroll

The International Time Recording Company
of New York
P. O. Box 1200, ENDICOTT, N. Y.

LONDON OFFICE: International Time Recording Co., Ltd. 30-32 Farrington Road, London, E. C., England
BERLIN OFFICE: International Time Recording Co., m. b. H., 135-136 Alexandrinenstr., Berlin, S.W., Ger.

Answers Every Demand You Can Make of a Flooring—

J-M MASTIC FLOORING

Consider these important advantages of J-M Mastic Flooring and draw your own conclusions as to whether or not its use will pay you.

Its base is Trinidad Lake Asphalt—used because of its remarkable, natural ductility, toughness, strength and enduring quality.

It is not only waterproof and practically wear-proof, but also unaffected by acids, alkali and brine.

It is absolutely sanitary and can be thoroughly cleaned by flushing, after which it dries immediately.

Because of its noiseless character, its peculiar holding quality, which prevents slipping, and the fact that it does not originate dust, it is perfectly adapted for all heavy traffic.

Being resilient, it does not cause foot soreness and fatigue, thus adding to the comfort and efficiency of your employees. Our engineers furnish advice and suggestions without any obligation on your part.

Write nearest Branch to-day.

H. W. JOHNS-MANVILLE CO.

Atlanta	Columbus	Louisville	Omaha
Baltimore	Denver	Memphis	Philadelphia
Boston	Detroit	Milwaukee	Pittsburgh
Buffalo	Galveston	Minneapolis	Portland
Chicago	Indianapolis	Newark	St. Louis
Cincinnati	Kansas City	New Orleans	Salt Lake City
Cleveland	Los Angeles	New York	San Francisco
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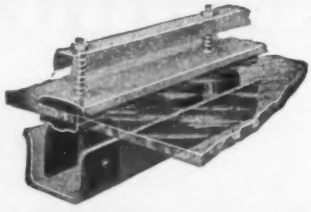
THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED
Toronto Montreal Winnipeg Vancouver

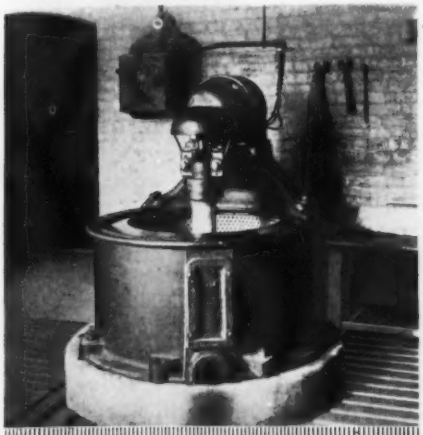
Sunlight Output on Dark Days



ANTI-PLUVIUS
(Trade Mark)
Puttyless Skylights
(PATENTED)

Get all the daylight you can on these dark days. A leakless, permanent, fireproof, puttyless skylight is a big money saver to a mill during the winter—and just as much in the summer. It aids production all the year 'round. "Anti-Pluvius" cover such roofs as the Forstmann & Huffmann Mill at Garfield, N. J. and the Caswell Cotton Mills, Spencer, N. C.

The G. Drouvé Co. Bridgeport, Connecticut



Install An Extractor

CENTRIFUGAL action is now being used in textile mills everywhere to separate liquids from textile material of all descriptions. The photograph above, for example, shows one of the seven S. & U. Extractors now in use by the Sauquoit Silk Mills.

Our sales records show that a great many of these mills have sent in one or more repeat orders after their first machines had demonstrated that they could handle more material, and help reduce production costs.

Schaum & Uhlinger Centrifugal Extractors

are made in a wide variety of styles and sizes to meet individual needs. We do not say we are sure one of them will solve *your* extraction problem—if you have one, but we point to past experience and say "We think investigation will be time profitably spent." Perhaps we can tell you how some other concern has solved an exactly similar problem. At least, we can give you facts from which you can draw some mighty valuable conclusions yourself.

Our new book "Centrifugal Extraction" will help you. It contains a great deal of information that you should have.

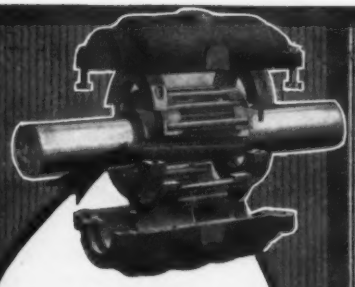
Will you ask for it? No obligation, of course.

Schaum & Uhlinger, Inc.

Glenwood Avenue and 2d Street

Phila., U. S. A.

Type "E" Extractor



The Value of the "Split" Feature

reveals itself at once after these roller bearings "get on the job." Ask some of the many "Sells" users—we'll send you the names—how quickly *marked* economies in power consumption, lubrication and maintenance reveal themselves. The purpose of the split feature in

"Sells" Roller Bearings

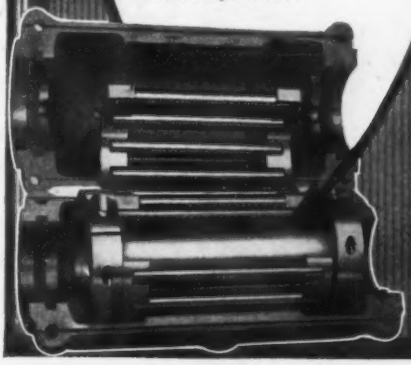
is to make their installation as easy as that of babbitted bearings, and to take the irksomeness out of inspection of the interior parts So, to get the full value of the arrangement, *every* part is split—the shaft-protecting sleeve, the retaining collars, the roller cage and the surrounding box.

Let us send you an interesting bundle of correspondence taken from our files. It wont obligate; but it *will* interest you.

Royersford Fdy. & Mach. Co.

56 North Fifth Street
Philadelphia

Besides "Sells" Roller Bearings—Babbitted Ring Oiling Bearings; Shaft Hangers, Collars, Couplings; Punches, Dies and Shears; Sensitive Drills; Punching and Trimming Presses; Foot Presses; Grinders and Polishers; Tumbling Barrels; Iron Castings; "Rollerine," the ball and roller bearing lubricant.



Breton Oils

For wool are of definite and uniform quality. Over quarter of a century of hard work and constant attention to details has brought and keeps Breton Oils at the front. A grade for every requirement.

Sold subject to trial and approval.

BORNE, SCRMYSER & COMPANY, 80 South Street, New York
Boston Philadelphia Works, Claremont, N. J.

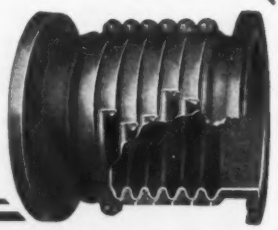
Give Your Engineer Time for Useful Work

Your engineer can be employed on more profitable work than packing leaky expansion joints if you have

BADGER
Expansion Joints

50-12

He'll never have to pack them. They never leak — they can't because made of one piece of copper. He'll never worry over the strains due to temperature changes in the steam line. He can look after your bigger interests — turbines, engines, generators, etc. It counts there. For full information write to



E. B. Badger & Sons Co. 73 Pitts St. Boston, Mass.

RELIANCE
CLOTH HANGING MACHINE

For shrinking woolen, worsted and cotton goods; **drying oilcloth,** or waterproof cloth, and curing rubberized cloth.

Can be attached to any machine or operated separately

In use by the United States Quartermaster **department** for shrinking uniform cloth.

Write for catalogue and prices

Reliance Machine Works
Frankford. Phila.

WILLIAM FIRTH
Pres.

THE

FRANK B. COMINS
Vice-Pres. and Treas.

American Moistening Company

120 FRANKLIN STREET, BOSTON, MASS.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"SIMPLICITY AND ORIGINALITY OF DESIGN"

Is the largest manufacturer of HUMIDIFIERS in the world. The last twenty years receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.
The only System adopted in the Textile Schools. Write for booklet "T" on Humidification.
Legal proceedings will at once be taken against infringers and users of infringements.

JOHN HILL, Southern Representative, 1014 Healey Building, ATLANTA, GA.

WM. SELLERS & CO., INCORP'D

Main Office and Works
1600 Hamilton St., Philadelphia, Pa.

New England Office
79 Milk St., Boston, Mass.

Latest and most approved methods of

POWER TRANSMISSION

by

BELTS, ROPES OR GEARS

Write for full information

SALEM ELEVATOR WORKS

Salem, Mass.

Elevators Especially Adapted for Textile Mills

Protect Yourself Against Liability Laws

We make a specialty of attaching to Elevators, already in use, Automatic Folding Hatch Doors, Semi and Full Automatic Gates, Automatic Locking and Stopping Devices, Automatic Car Safety Attachments, etc.

Send for Illustrated Catalogue and Estimate

The New Skein Wound Cone

This cone has an entirely new and original shape.

With a distinctive traverse to form the shape and size of the body of yarn and so constructed that the shape is specially formed to build the amount of yarn thereon, and to make the off-take greater than with the use of bobbins.

The traverse is so regulated that at the start the cone assumes the relative wind as on the bobbins. As the height increases the diameter increases also and when finished the cone will contain more yarn than the bobbins.

Winding of two thread silk from the skein or twisting bobbins is usually the hardest problem to handle, with us it can be wound as easily as 8 or 10 thread silk.

Also can be used for artificial silk from the skein to the cone or for fine mercerized yarns from skein or otherwise onto the cone.

The results obtained from the use of this new cone are better than from regular wound bobbins, for the reason that the yarn is wound onto the tube so that each layer of yarn we build upon the tube ties itself and binds the yarn together. It will unwind without any interference from the retained layers of yarn and will pull off only as required without any resistance whatsoever.

The method of winding from the skein and the shaped body of the yarn makes it impossible for any loops or loose yarn to appear and prevent uneven work and "press offs."

The great problem today is the resistance due to the surface that the yarn has to travel against, on both the cones and bobbins. The new cone has proved by actual use that the off-take of the yarn runs free in every way. The benefits occurring from our method of winding will, we believe, revolutionize the future cone-winding business.

You can save enough in winding and on the reduction of waste to offset the original cost of the machinery and in a short period your equipment will be earning money by eliminating irregular work and press offs.

We have had actual working tests to prove all we say regarding this new and remarkable invention which is valuable for many reasons. Its use will be appreciated. Write for details as to why you should use it.

JACOB K. ALTEMUS

Textile Machinery

2824 North Fourth Street - - - Philadelphia, Pa.

In Old England

IN selling DUXBAK overseas we found England our hardest foreign market. We had to prove conclusively to the Englishman that DUXBAK would meet his peculiar conditions of climate and service—and it was only natural, for the first leather transmission belts were made in England and, there, prevailed a damp climate peculiar to that country.

BUT DUXBAK won on its quality—and quality is the deciding factor with these conservative manufacturers. It ran the machines in his breweries, steel plants and cotton mills. It worked equally well in winter as in summer. And it did not soak up water and oils, or open at the joints as ordinary cemented belts do. So the Englishman has accepted it as a standard waterproof belting and today we enjoy a very tidy business with this land across the sea.

WE would appreciate an opportunity to convince you how valuable DUXBAK will be in your service—a word from you will bring you a DUXBAK belt from the Schieren Agency nearest you, which we wish you would put on the hardest transmission in your plant. Watch it at work for 60 days and you will appreciate why DUXBAK is "America's Best Known Belting."

In our long export experience we have found many interesting power transmissions, some of which might be valuable to you if you are having trouble with your power drives. Write us in detail and we will gladly assist you.

Chas. A. Schieren Company
ESTABLISHED 1868

Tanners
Belt Manufacturers
OAK LEATHER TANNERIES

New York - 21 Ferry Street

BOSTON: 641 and 643 Atlantic Ave., opp. So. Station
PHILADELPHIA: 226 No. Third Street.
SEATTLE, Wash.: 620 Fourth Avenue.
CHICAGO: 128 West Kinzie St.
DENVER: 1752 Arapahoe St.
PITTSBURGH: 205 Wood St.
PETERSBURG, Va.: 20 Shore Street.

The Texas Chas. A. Schieren Co. Inc., 106 South Market St., DALLAS, Texas.

BRISTOL, TENN.

-DUXBAK- *The Belt of Universal Use*

This equipment is using exhaust steam at atmospheric pressure. Compare with conditions in your boarding room

Saves Labor, Power, Steam and Seconds

FORMS ARE MADE TO SUIT YOUR STYLES

You Can Secure This Equipment Without Capital Outlay

For particulars write

THE PARAMOUNT METAL FORM DRYING COMPANY, - BEAVER DAM, WIS.

Patented Sept. 3, 1912—October 24, 1914. Other patents pending

Don't Waste Your Trucking Dollars!

Watch the average truckman in any textile mill. Notice the amount of time he consumes loading and unloading his truck. Fully one-half is spent in rehandling operations. The necessity of rehandling is responsible for damage to materials also. Avoidance of these troubles is cared for MOST satisfactorily by the installation of

National Chapman Elevating Trucks

Built in nine standard models, this type of Elevating Truck eliminates all unloading, enabling each truckman to work faster and more systematically. Many satisfied users testify to a saving of from 50% to 90% of former trucking costs.

Material to be moved is stored on wooden platforms or skids. Pushing the elevating truck under the loaded platform and pulling the handle downward elevates the load. A handle release mechanism on the 1915 model does away with the foot lever and makes the lowering operation operation more simple.

Our interesting Catalog "W" showing both Counting Machine and Trucks in actual operation should be on your desk. Send us your address for a copy TO-DAY.

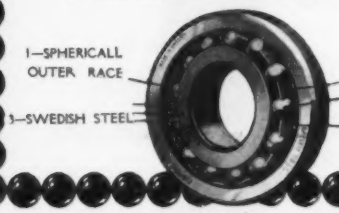
NATIONAL COUNTING MACHINES

give the exact number of yards of cloth in an unknown quantity without figuring, weighing or machine attachment. May we tell you of this machine also?

National Scale Co. 18 Record St. Chicopee Falls, Mass.

YOUR SALESMEN

Provide Them With Order-fetching Talking Points.



"You see, our machines are equipped with ball bearings.

"They are different from any ball bearing made—called SKF. The most economical bearing you could use.

SKF Ball Bearings are self-aligning, that is, the shaft can bend without injury to the bearing. (See the curved outer race, 1 in illustration.) 'The ball and socket' principle takes care of any binding of the shaft. Think of the relief of having a bearing that won't run hot, that doesn't need attention more often than three or four times a year.

"Each SKF has a double row of balls, carried in staggered relation, (2), two bearings in one—double life—double capacity.

The steel? It's Swedish steel, (3) uniformly hard throughout, highly and accurately finished. No appreciable wear after the hardest kind of service. That means accurate bearing setting, maintained accuracy, better work.

"Another feature you should notice—the ball retainer (4), made of Swedish Lancashire iron without bolts screws or rivets to work loose and jamb the balls.

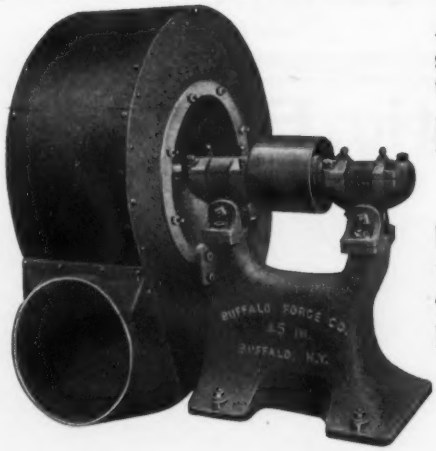
"The saving in power, repairs and upkeep makes SKF a profitable investment. That's why we put them on our machines.

Write for the folder "Some Pointers for Your Salesmen."

SKF BALL BEARING CO.
50 Church Street New York

Buffalo Cotton Gin Fans

Built to suit installation conditions



Advise us your requirements and our engineering department will recommend a fan that will give you

Highest Efficiency
Lowest Power Bills

because it will be especially adapted for your work. Having various types we are not compelled to offer one to meet all conditions.

Let us send you Catalogue 256-74.

Buffalo Forge Co.
Buffalo, N. Y.

Manufacturers of Forges, Blowers, Drills, Heating, Ventilating and Drying Apparatus

The "Reeves" Way is the "Money-Making" Way

of controlling the speed of your machines.

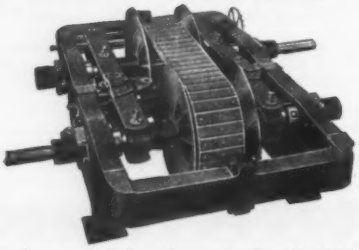
It gives exactly the speed you need for any fabric on any machine.

Wherever you have been using cone pulleys, gears, expanding pulleys, steam engines or other unsatisfactory methods of changing the speed you will find

"The Reeves" Variable Speed Transmission

will save materials, time, labor, trouble and power.

It will help you do more work and better work at less expense.



More than 500 of them in use in Textile Mills driving dryers, tentering machines, singers, mangles, washing machines, etc.

Catalog T-16 tells about it

Reeves Pulley Co., • Columbus, Ind.

Chicago Branch, Corner Clinton and Monroe Sts.

EASTERN AGENTS:

Lewis E. Tracy Co., ... Boston
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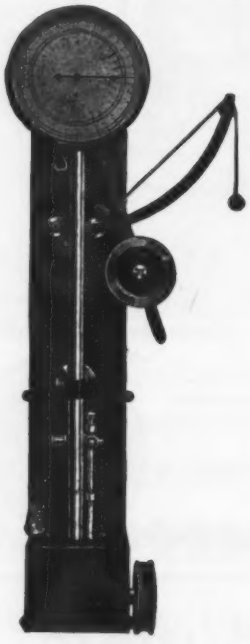
AUTOMATIC POWER YARN TESTER

PATENTED



Manufactured by

HENRY L. SCOTT & CO.
223-233 Eddy St., Providence, R.I.

Send for Catalogue C

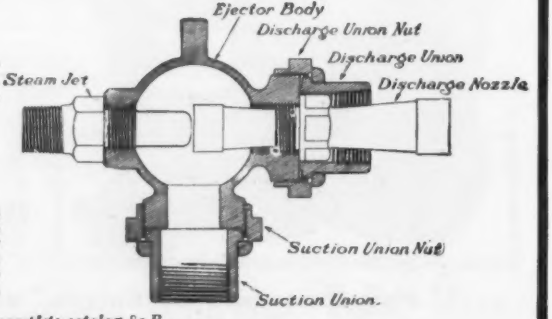
An Automatic Ejector

FOR DYEHOUSES AND BLEACHERIES

Where chemical solutions come in contact with internal moveable metal, such parts are rapidly destroyed as in centrifugal and reciprocating pumps for delivering bleach.

The Perkins Improved Bleach Ejector

has no such internal moveable parts. The steam jet and discharge nozzle are the only wearable parts and they are made interchangeable. No engine or motor power is required. Simply turn on the steam valve and the ejector will heat and deliver the bleach at the same time effecting a big saving in steam and fuel.



Write for complete catalog 85 B

B. F. PERKINS & SON, INC., HOLYOKE, MASS.

DYEING MACHINES
Giles
TRADE MARK

If You are Interested in

Machines for
Dyeing or Bleaching Yarns

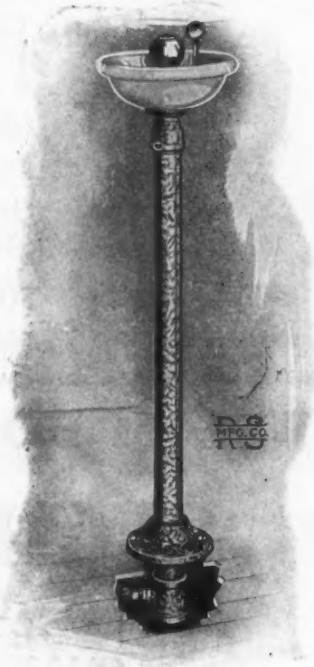
Cotton
Wool
Worsted
Silk
Artificial Silk
Ramie

Write us to send you an estimate of cost of installing an equipment as well as the economies in labor and steam that can be made.

John H. Giles Dyeing Machine Co.

TAUNTON, MASS.

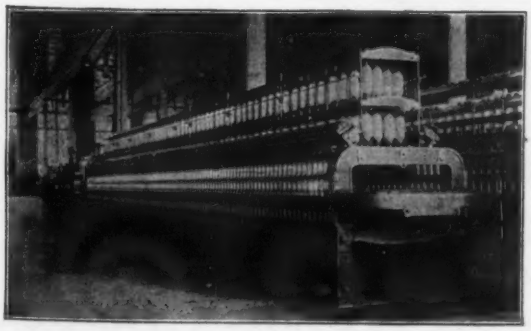
ECONOMY



This is one of our many inexpensive bubblers. Your people are in better condition, when properly refreshed, to give their best effort, so from a selfish as well as from a humanitarian standpoint, they should be furnished with modern, sanitary drinking fountains which will minimize sickness and time spent in using the old methods.

Rundle Spence Mfg. Co.
Milwaukee, Wis., U. S. A.

THE BROWN SPIN-WRIGHT



Commercial Frame

As Operated Successfully in a Large Mill

For Particulars Address

The Brown Spin-Wright Cotton Co.

32 Union Square, New York, N. Y.

Tolhurst Self Balancing Extractors

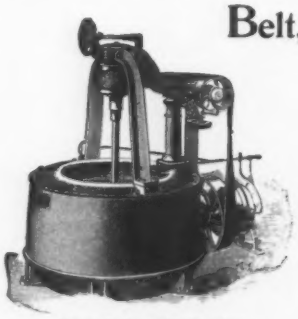
Belt, Engine and Motor Driven

Sizes 12" to 72"

Dye Tubs and Tanks

Reel Dyeing and Bleaching Machines

Washing Machines



Over Driven Extractor

Open Top Extractor

TOLHURST MACHINE WORKS, Troy, N. Y.

FRED H. WHITE, Southern Representative, Realty Bldg., Charlotte, N. C.
JOHN S. GAGE, Western Representative, 1311 Hartford Bldg., Chicago, Ill.

WILLIAM BODDEN & SON, Limited

The "BODDEN" Flyer

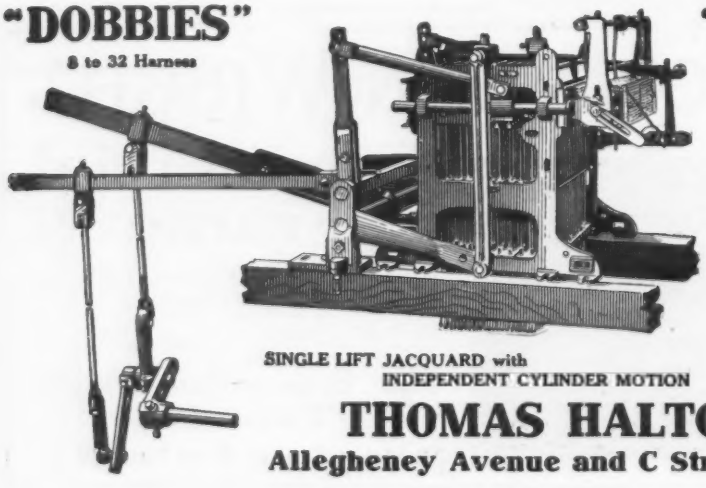
For QUALITY OF FINISH
For QUANTITY of PRODUCTION
HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

Thomas Mayor & Son, Olney Street, Providence, R. I.

"DOBBIES"

8 to 32 Harness



SINGLE LIFT JACQUARD with INDEPENDENT CYLINDER MOTION

"JACQUARDS"

208 to 2608 Hooks

ALL TYPES

HARNESS BUILDING

THOMAS HALTON'S SONS

Allegheny Avenue and C Street, Philadelphia

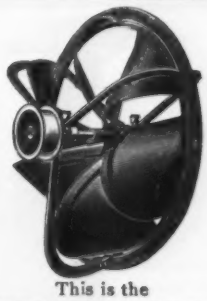
The BERRY WHEEL
CONQUERS DYE HOUSE FOG

Steam in your Dye House interferes with your production and keeps down your profits. You can get rid of it and keep the atmosphere clear by installing a Berry Wheel. It helps keep your textiles dry—helps your employees—it conquers the "fog."

You can get a warm weather production percentage in winter—if you use a Berry.

For Drying and Ventilating Facts, Write To

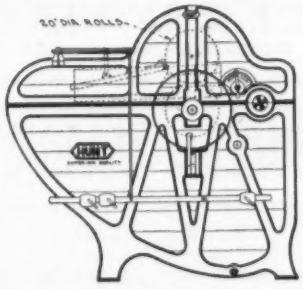
A. HUN BERRY, 29-33 West First St., Boston



This is the
BERRY WHEEL OR FAN
WITH NO BACK DRAUGHT
the most effective agent on the market for drying and for eliminating steam and other impurities from the air.

LATEST MODEL

TYPE M Double Braced Fulling Mill



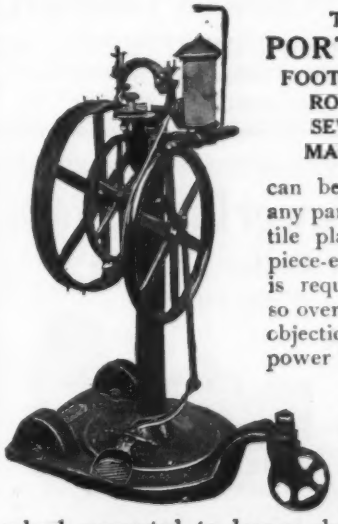
The Mill with the **7 Exclusive** Features

Side Frames with M-Cross Braces giving greater strength and providing for much more secure fastening of side frames. Outside Compound Weight Arms controlling pressure of Packing Box Covers. Instantly adjustable from lightest to heaviest loads. Heavy Keyed Packing Box Levers outside of mill and connecting downward directly onto Covers with greatest leverage. Most effective Packing Box Construction with brass "wear strips." Adjustable bottom boards. Extra heavy design. Trouble Proof Bearings preventing oil stains. Self-aligning, assuring free running at all times. Stop Motion Frame counterbalanced, allowing instant adjustment to operate by lightest tangle or heaviest knot, as required. Fitted with positively reliable Friction Clutch Pulley of such simple design and construction that the most skeptical operators prefer after once using.

Ask for Bulletin 302-M

RODNEY HUNT MACHINE CO.
86 Mill St., Orange, Mass.

USE IT ANYWHERE



THIS
PORTABLE
FOOT-POWER ROTARY SEWING MACHINE
can be used in any part of a textile plant where piece-end sewing is required, and so overcomes, all objections to a power machine.

The cloth is stretched to a large feed wheel connected to looper shaft, which can be instantly detached.

By a device peculiarly our own, needles do not break and stitches are all uniform length, and feed of cloth wheel is positive.

It will sew Cotton or Woolen Goods, Thick or Thin, Wet or Dry.

Send for complete catalog.

Satisfactory operation of all machines guaranteed.

DINSMORE MANUFACTURING CO.
SALEM, MASS., U. S. A.

Power Transmission Machinery

CRESSON-MORRIS COMPANY

Successors to Geo. V. Cresson Co.

Engineers—Founders—Machinists

PHILADELPHIA, PA.

THE PALMER

Adjustable Thread Guide

Cheapest to Buy

Cheapest to Install

Easiest to Adjust

Absolute and Rigid Adjustment

Mail Guide Block for Free Sample

Patented and Manufactured by

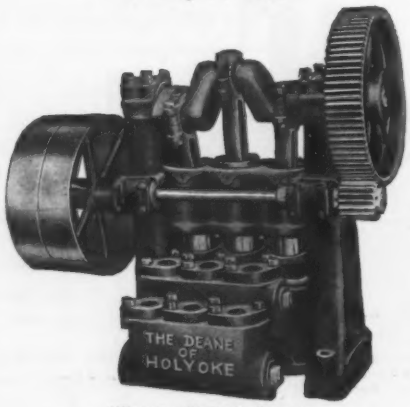
THE I. E. PALMER CO.

MIDDLETOWN, CONNECTICUT

EFFICIENT **Power Pumps** OF QUALITY

for Boiler Feeding

or any service



Write for Bulletin D204-52

International Steam Pump Company

Deane Steam Pump Plant

Power Pump Manufacturers

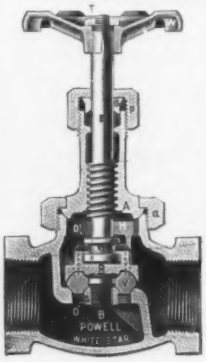
Works: Holyoke, Mass. N. Y. Office: 115 Broadway

Branch Offices in Principal Cities D225.2

POWELL VALVES

(Especially The White Star Valve)

FIVE POINTS OF EFFICIENCY COMBINED IN THE POWELL "WHITE STAR" GLOBE VALVES



¶ 1. Body symetrically designed and well proportioned.

¶ 2. Union bevel ground joint connection between body and bonnet.

¶ 3. They have Regrindable, Reversible and Renewable non-corrosive "Powellium" discs.

¶ 4. Observe illustration of disc holder "R" easily removed from stem "D" when necessary for repairs.

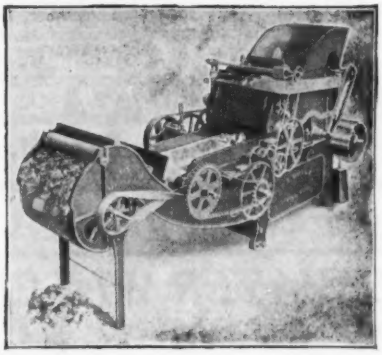
¶ 5. All working parts are interchangeable. Stem can be re-packed under pressure.

THE WM POWELL CO.

DEPENDABLE ENGINEERING SPECIALTIES

CINCINNATI, O.

The Latest "Dodge"



Rag or Shoddy Picker

With Improved Non-Clogging Condenser

MAKES fire-proof gauze room unnecessary, saves space, and reduces fire hazard. Picked stock always in sight, and easily removed. Equally efficient on fine or coarse work. Equipped with Imported Ball Bearings. "Bit" Attachment insures better and more uniform product. Send for details.

C. S. DODGE, LOWELL, MASS.

Pickers, Bagging Machines and Picker Pins. Cylinder Coverings a Specialty.

"IF DODGE DOES IT—IT SATISFIES"

Reasons Why You Should Use Gandy Stitched Cotton Duck Belting

YOUR choice of a belt depends on two considerations: service, first; and price, second. You are bound to buy where you are sure of getting the greatest amount of Service for the least outlay of money.

On these two considerations, "The Gandy Belt" offers you the following:—

Proof of service under the severest conditions of use (dust, dirt, moisture, exposure to acid fumes, etc.). This proof in the form of letters received from satisfied users. Thousands of Gandy Belts are now operating satisfactorily in all lines of industry. Names of users furnished on application.

Price: The initial cost of "The Gandy Belt" is only about 1-3 that of leather belting and much less than that of rubber belting, while it does the work equally as well.

Whenever you are interested we will send you samples and full information.

The Gandy Belting Company

747 W. Pratt Street, Baltimore, Md.

New York Office - - - 36 Warren Street

REVOLVATOR Reg. U.S. Pat. Off.

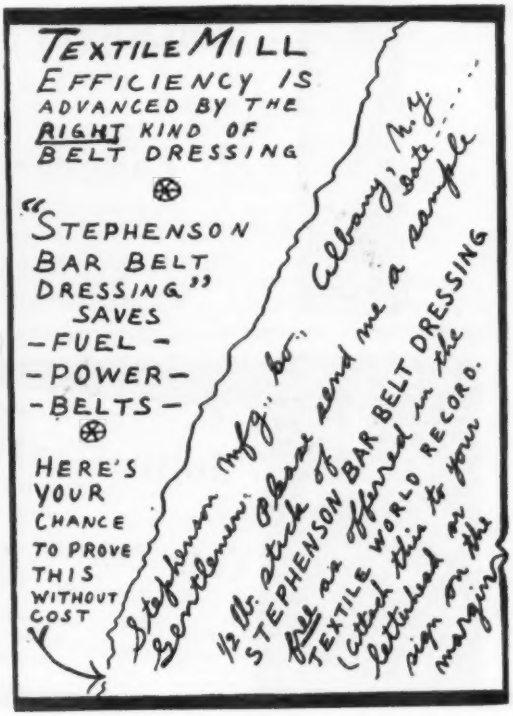
For the Quick, Cheap, Safe Piling and Unpiling of all Descriptions of Merchandise

This portable elevator cuts down labor bills, time consumed. Builds up warehouse efficiency.

Send for Bulletin W-28, "The Revolvator."

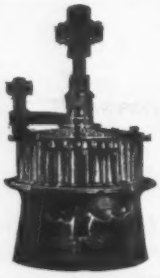
N. Y. Revolving Portable Elevator Co.

349 GARFIELD AVE., JERSEY CITY, N. J.



THE DOUBLE, BURNISHED OR DIAMOND FINISHED
RIBBED RING
WHITINSVILLE
MASS.
MADE BY THE WHITINSVILLE SPINNING RING CO.
THE BEST THAT EXPERIENCE CAN PRODUCE, THAT MONEY CAN BUY

THE SAMSON TURBINE WATER WHEEL



AND WHY IT IS BEST IN

POWER, SPEED AND ECONOMY

The Leffel Wheel, now developed into the Improved Samson Turbine, will continue to maintain, as it has for the past 49 years, its superiority because of features that give it wonderful power and high velocity, economy in the use of water, and an unusual steadiness of motion under variable gateage.

These are points of merit established by scientific and experimental tests.

Send for catalog illustrating and describing the different types and proving their merit

The James Leffel & Co.

502 Lagonda St. Springfield, Ohio

AMERICAN VULCANIZED FIBRE CO.

C. C. Bell, V. P., 12 Pearl St., Boston, Mass.

MANUFACTURERS

Laminar Fibre Roving Cans

All sizes, standard and special. Electrically Welded Tinned Steel or Fibre Rims. Steel or Wood Bottoms. Fibre or Steel Kicking Bands.

Strongest and Smoothest Can on the Market. In Use for 25 Years

Established 1870
John Heathcote & Son
Providence, R. I.
Builders of Improved
Cloth Tentering and Drying Machinery
for WOOLENS, WORSTEDS, FELTS, Etc.
Built Upright or Horizontal with Low Down Feed
Ventilating Fans a Specialty
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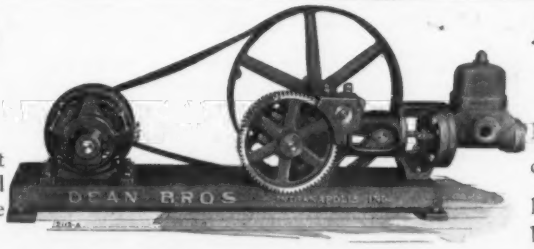

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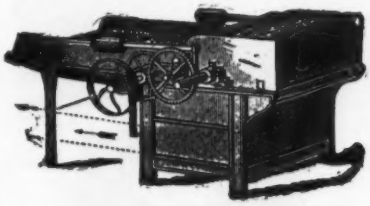

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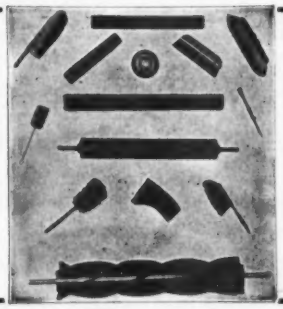

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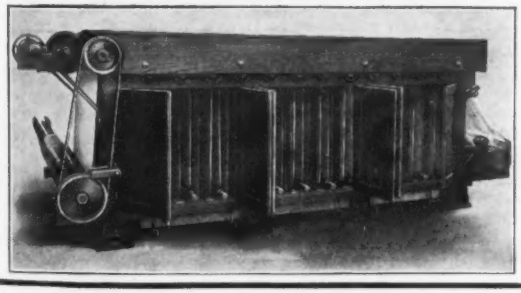

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TEXTILE WORLD RECORD

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BADISCHE COMPANY

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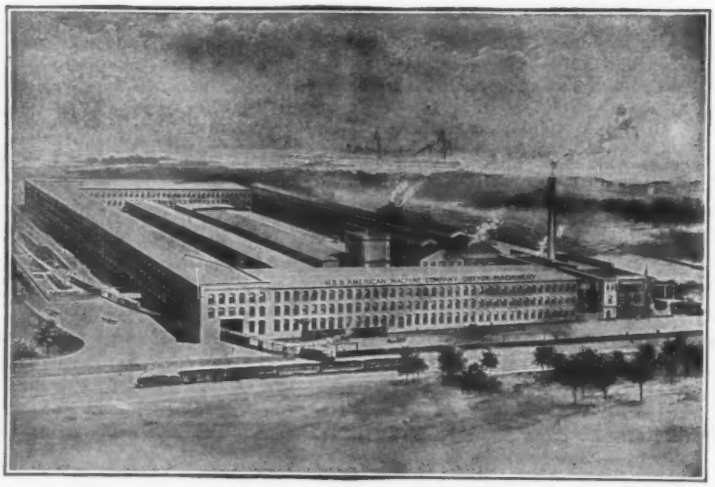
Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

COTTON MACHINERY



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TEXTILE WORLD RECORD

JANUARY, 1915

Monthly Comment.

The Development of the Cotton Schedule

The installation of a plant for regulating humidity and temperature in the textile testing room at the New York custom house, of which a description appears in this issue, means the adoption of one more of our recommendations for the framework and administration of the present tariff on cotton goods.

Following is a summary of these recommendations:

(a) March, 1913: That the cotton cloth tariff should be based on the average yarn number in cloth, and not on the highest yarn number, which was the basis for the Underwood cotton tariff bills of 1911, 1912 and 1913, although it was clearly impossible to determine it.

This recommendation was rejected by the House, but later adopted by the Senate and House, and is now in the law.

(b) March, 1913: That the average yarn number should be determined by taking the weight of the finished cloth from which the sizing has been removed, and taking the length of the yarn to be equal to the distance covered by it in the cloth.

These recommendations were rejected by the House, but later adopted by the Senate and House, and are now in the law, the definition of the length of the yarn being nearly identical with the phrase used in our recommedation.

(c) March, 1913: That the tariff rates shall increase regularly and progressively with the increase in the yarn number, and not by the step-ladder arrangement of the Underwood cotton bills of 1911 and 1912.

This recommendation has not yet been adopted.

(d) April, 1913: That the tariff yarn number should be determined under uniform conditions of temperature and humidity by an apparatus similar to that used at the Manchester (Eng.), Testing House.

The contract has recently been awarded for such an apparatus to be installed at the New York custom house.

(e) March, 1913: That the tariff yarn number be determined by the "straight line" method, that is, dividing the number of threads per inch by the number of grains in the weight of 1/300th square yard of cloth.

This recommendation was adopted on Oct. 30, 1913, by Treasury Decision 33823.

(f) November, 1913. That the average yarn number should be based on a moisture regain of 8 1/2 per cent., which is the world standard for cotton.

This recommendation was made when it was announced that the Treasury Department proposed to adopt a regain of 7 per cent., which it did on Oct. 30, 1913, in Treasury Decision 33823 on the recommendation of the Bureau of Standards. On March 10, 1914, our recommendation was adopted by a Treasury order providing for a regain of 8 1/2 per cent., and stating that the Bureau of Standards after further investigation had formed the opinion that the regain should be 8 1/2 per cent. instead of 7 per cent.

The installation of the apparatus for regulating temperature and humidity at the New York custom house, where samples of the cotton goods imported at all ports are tested for appraisal, leaves but one (c) of our recommendations to be accepted by the Government, namely, the progressive adjustment of the rates to the increase in the average yarn number. In the meantime it will be well to keep in mind that the administration of this schedule as framed and administered in accordance with our recommendations, has presented no difficulties whatever, either to the customs officers or private individuals and firms. The only difficulty that has

arisen has been due to the retention of the step-ladder adjustment of rates, instead of the progressive arrangement which we recommended. The step-ladder adjustment is objectionable not only by reason of its leaving long gaps where the rates are uniform despite a considerable increase in the yarn number, but also because of the fact that a slight variation of or error in determining the yarn number when it falls near the dividing line, may result in a material increase or decrease in the assessed duty. These objections would be completely overcome by the adoption of the progressive adjustment of rates, but this must wait for the next revision of the tariff.

Wool Goods in China

Several months ago the Department of Commerce directed Ralph M. Odell, commercial agent, who was about to start for China, to investigate and report on the Chinese market for woolen goods. His report, dated Shanghai, November 7, 1914, has recently been received and by the courtesy of the Department we have had the opportunity to examine it. It is a concise, business-like statement of trade conditions and we understand is to be published in the Daily Consular and Trade Reports. The report gives the following statistics of wool goods of all kinds imported into China in 1912 and 1913:

	1912	1913
Woolen goods	$2,876,618	$3,561,218
Wool and cotton goods	2,931,337	2,526,914
	$5,807,955	$6,088,132

Accompanying the Odell report were a number of samples of wool kerseys in light colors, to which the following reference was made:

> Another class of woolen goods in demand among the Chinese is 54-inch medium or union cloth and army cloth, which comes from England and the Continent. There are many different qualities and designs on the market, but the samples which are forwarded will show the principal colors and one of the best selling grades. These goods are being purchased mainly from Germany, but deliveries have stopped since the outbreak of the war. The price on the Shanghai market at the present time is about ninety cents per yard.

We have analyzed several of the samples and found them to vary considerably in weight and construction, three of them weighing 14.4, 14.8 and 16.8 oz. per yard, 54 in. wide respectively, while the picks varied from 33 to 40 per inch. The analysis of one of the samples resulted as follows:

> A carded woolen kersey, piece dyed and all wool: Weight, 14.4 ozs., 54 in.; warp, 44.4 threads per in., 3.4 runs; filling, 32.5 threads per in., 2.4 runs.

The sizes are for the yarn as it lies in the finished cloth without allowance for loss of weight in finishing or shrinkage in length. Allowance for these changes must be based on the judgment of the manufacturer in estimating the size of the yarn when spun.

The goods are sold in light colors and would require fine, white wool. Cape wool of the required quality would cost about 58 cents per pound, scoured. A proportion of fine noils or other white wool stock may have been used in the German fabric, although this cannot be determined with certainty by an examination of the samples. Assuming, however, that the cost of the raw material has been reduced to 50 cents per pound, scoured, by the admixture of noils or other wool stock, a fair estimate of the cost of the goods would be:

20.7 ozs. wool at .50	.647
Manufacturing	.30
Cost per yd. at mill	.947

Estimating the cost of selling and transportation at 10 per cent., the American manufacturer would receive $.81 a yard for wool goods that cost $.947 at the mill in this country. Looking at the business in another way: The manufacturer in this country receives 81 cents per yard for the goods. The raw material alone costs 64.7 cents per yard. This leaves the manufacturer 16.3 cents per yard to cover the cost of manufacturing and yield profit, when as a matter of fact the manufacturing alone will cost 30 cents a yard.

A market which absorbs $6,000,000 worth of wool goods per year on such a basis as that may well be left to our foreign competitors, while American wool manufacturers devote their attention to supplying the home market, where in 1909 goods to the value of $529,131,511 were consumed.

Pushing the Myers Bill

On March 19, 1914, a duty of the first importance was imposed on the Senate Committee on Manufactures, of which Senator Reed, of Missouri, is chairman, when the Myers textile labeling bill was referred to it for consideration. The importance of the duty was measured, not by the Myers bill itself, but by the fact that the bill brought up the broad question of legislating to prevent fraud and misrepresentation in the sale of all kinds of goods in interstate commerce. Seven months later, on October 13, 1914, Senator Pomerene, of Ohio, a member of the Committee reported the bill with amendments, which, as we explained in November, aggravated a measure already impossible by requiring that goods shall be labeled to show the proportions of new and reclaimed materials used in their manufacture, not only in the case of wool, but of textile fibers of every description. The report bears no indication that it is not from the full committee, but on the contrary begins with this: "Mr. Pomerene, from the Committee on Manufactures, submitted the following report."

Knowing that some of the members of the Committee on Manufactures had studied this labeling question carefully, we started an inquiry to discover, if possible, how a bill impracticable in its original form was made still more absurd and then reported favorably to the Senate. We applied to Senator Pomerene who reported the bill, and failed to obtain any light. Then we applied to another member of the majority and in reply received this statement from his secretary:

> The record of our Committee shows that the Committee met and authorized the Chairman to appoint a sub-committee to meet and have hearings, and make the report of the Committee.
>
> Senator Pomerene was one of the members of this sub-committee, and he made the report for the sub-committee. I, therefore, take it that the report would be considered the unanimous report of the Committee as a whole.

The Senator's secretary may accept the Pomerene report as the unanimous report of the Committee, but we are confident it will not be so accepted by the members of the Committee themselves, and we are equally confident that this consideration of the Myers bill by the Committee on Manufactures, of which Senator Reed, of Missouri, is chairman, will not be considered by the public to be a proper performance of senatorial duty. The secretary speaks of "hearings," but so far as we can discover there were no hearings deserving the name. The Pomerene report says:

> This bill after its introduction was referred to the Department of Agriculture for its opinion thereon and views as to the need thereof and feasibility of its enforcement. The Department of Agriculture is heartily in favor of the bill. It approves the principle thereof and believes that it is enforceable. Nearly all the amendments recommended were suggested by the Department of Agriculture, which has taken an active interest in the bill and furnished much valuable information in relation thereto.

Having had some experience with the easy way in which opinions from the departments are obtained by members of the House and Senate, we concluded to look into this case, and in reply to our letter of inquiry received the following statement from the Department of Agriculture:

> The statements to which you refer were in response to a specific request from Senator Myers and were not intended as a complete discussion of the matter. . . . The statements were prepared merely for Senator Myers' information and without specific reference to legislation. The Department has not been formally or officially consulted with reference to the bill.

And so it turns out not only that the Pomerene report on the Myers bill is merely the report of a sub-committee, but that the Pomerene sub-committee has placed the Department of Agriculture in a false position by representing that Department as "heartily in favor of the bill," when as a matter of fact it "has not been formally or officially consulted with reference to the bill."

Moreover in view of the character of the Pomerene report and the fact that its claim as to the Department of Agriculture is flatly contradicted by that Department, it would be well, before condemning the Committee on Manufactures, to determine how many and what members were present when the Chairman was authorized "to appoint a sub-committee to meet and have hearings and make the report of the Committee." It is not surprising that the supporters of the Grosvenor-Murdock-Lindquist-Myers bill were compelled to resort to such devious

and slipshod methods to secure a favorable report. On the contrary it is only by such methods that such a measure could escape rejection. The bill cannot stand up before intelligent discussion. It has reached the Senate by methods that cannot be reconciled with a proper performance of legislative duty. The Senate should refer the Myers bill back to the Committee on Manufactures with instructions to make a thorough investigation of the question of misrepresentation and fraud in the sale of goods, and report without unnecessary delay.

—÷—

The Dyestuff Problem

We give in another part of this issue an abstract of an address at Manchester, England, by Lord Moulton, chairman of the British Committee that has recently investigated the question of providing the United Kingdom with a supply of artificial dyestuffs. Lord Moulton has long been eminent as a great patent lawyer, and he has had notable success in cases involving highly technical and scientific questions. He is thus peculiarly well fitted to deal with the dyestuff problem, and his statement is of special value to the American trade because of the identity between British and American conditions. During his address Lord Moulton was asked about patents and replied that this presented no difficulty as a patentee must let his patent be worked in the United Kingdom if he was not prepared to work it himself. His summary of the measures that should be adopted was:

1. A company large enough to ensure economical production.

2. It must be national and immune from the danger of combining with or being absorbed by foreign competitors.

3. It must be supported by cooperation between producers and consumers.

The first two conditions involve no serious difficulty, but the third is likely to prove impossible of attainment under the British system of free imports of foreign products. It is impossible to separate business and selfishness. Competition makes selfishness an essential factor in successful business regardless of the personal inclinations of the individual. Whether this is a regrettable condition may be open to question, but that it is a fact admits of no doubt. Lord Moulton himself gave this illustration of it:

> I have heard a large dealer say: "Oh, I'm a business man; I only look at things as a business proposition, and a difference of a tenth of a penny would make me buy everything from Germany rather than from England." At that very moment tens of thousands of men were exposing their lives in the trenches to protect that man and his money.

In building up a national industry the only way to deal with this selfish instinct is to place a protective tariff on imported products and thus make it impossible for the individual to ruin the home industry by importing the cheaper goods from foreign countries. The British plan of cooperation by a partnership between producers and consumers without some form of fiscal compulsion is the fantastic and impracticable scheme of men who confuse free imports with free trade and who are ready to accept the essential principle of protection so long as that object is not attained by a tariff on imports.

If, as is certain at the start, British-made dyestuffs cost more than the German, the consumer who used the home-made product would be placed at a disadvantage in competing with the consumer who bought the cheaper foreign dyes. Under such conditions the cooperative enterprise would be doomed to failure. The only complete solution of the dyestuff problem in the United Kingdom involves the adoption of a protective tariff, which would apply equally to all, the unselfish and the selfish, the just and the unjust, in war and in peace. Lord Moulton said:

> This is your part—you can protect your country by taking care that when peace comes it shall be under no subordination. A great writer has said, "There is nothing more desirable than to be wise at a great moment." This is a great moment. Be wise.

To this he might well have added: "Be wise and place a protective tariff on dyestuffs."

Studying the Textile Labeling Bills

The favorable report in the Senate on the Myers textile labeling bill has aroused the textile trade to the importance of the issue involved. The American Association of Woolen and Worsted Manufacturers has appointed the following committee to study and report on the proposed legislation: Chairman, Frank S. Fay, the Worcester Woolen Mills Co., Worcester, Mass.; George F. S. Singleton, Singleton Worsted Co., Franklin, Mass.; G. Mortimer Specht, Glenside Woolen Mills, Skaneateles Falls, N. Y.; E. H. Dorr, Standish Worsted Co., Plymouth, Mass.; Charles Wilson, James & E. H. Wilson, Pittsfield, Mass.; Francis J. Regan, James J. Regan Mfg. Co., Rockville, Conn.

The Merchants Association of New York has also appointed a committee for the same purpose, the members being Horace B. Cheney, Cheney Bros., South Manchester, Conn.; J. B. Stephens, cotton goods; Max Naumburg, of M. & W. Naumburg & Co., clothing, and Julius Forstmann, of the Forstmann & Huffmann Co., Passaic, N. J.

The Merchants Association has written letters to Senator Reed, chairman of the Senate Committee on Manufactures, to Representative William C. Adamson, chairman of the House Committee on Interstate and Foreign Commerce, and to Representative James J. Fitzgerald, urging that Congress delay consideration of the Myers, Lindquist and Walker bills until the Association has been able to frame a measure embodying the principle of the British Merchandise Marks Act. In the letter to Congressman Fitzgerald the Merchants Association calls attention to the failure to give the textile industry an opportunity to state to the Committee the numerous objections to the various bills, and adds:

> While this association is strongly in favor of legislation which will adequately protect the public against fraud in textiles, it is of the opinion that none of the measures is properly adapted to the purpose intended, and that a suitable bill would be one along the lines of the English Merchandise Marks Act, which, we understand, will at a later date be prepared and presented to Congress.

It is hardly necessary to ask Congress to delay consideration of the textile labeling bills, as there has been no danger at any time of their receiving serious consideration in either the House or Senate at this short session. The Lindquist, Walker, Myers labeling bills were all introduced before election. They served their purpose, and now will be allowed to die with the present Congress. The methods by which the Myers bill was smuggled through the committee, show how little interest Congress is taking in the merchandise marks question. What is needed is an exposure of this neglect of the people's interests in order that the members of the 64th Congress may approach the problem with a proper sense of its importance.

—:—

Government-Owned Dyestuff Works

The pinch of dependence on Germany for dyestuffs is far more serious in Great Britain than in this country. The British supply is cut off completely, whereas more or less dyestuff finds its way to this country by the uncertain ferry-boat service between New York and Rotterdam. So serious is the situation in the United Kingdom that the Government has given its approval to the adoption of measures for providing a supply of British-made dyestuffs. Such measures are of necessity a form of protection, but curiously the plan proposed by the free trade Government of Great Britain goes far beyond what is generally meant by protection, and contemplates a form of government ownership of dyestuff works. Some of the loyal defenders of the doctrine of free trade object to this revolutionary measure, and a few weeks ago one of them, A. Sherwell, M. P., from Huddersfield, brought the subject up in the House of Commons;

> The statement some days ago that the Government were to assist in financing and organizing a great chemical combine for the manufacture and supply of synthetic dyes and colors must have taken the average member of the House by surprise. It was said that in the estimation of the Board of Trade there were urgent conditions which required that the project should be proceeded with without delay. The proposals were of an extremely vague character. So far as one could understand the proposal was that the Government should assist the manufacturers of these

dyes and colors in this country to form a combination or syndicate which would guarantee to the textile industries a constant and sufficient supply. . . .

What were the grounds on which the Government was prepared to justify this wholly new and far-reaching proposal? Was not the fear that the textile industries in this country were face to face with a very real shortage of these dyes and colors a little exaggerated? Had the Government complete and convincing evidence on the point? . . .

He wondered if the Government realized to what extent they were committing themselves. The guarantee of interest must be for a long period if it was to be effective. Suppose representations were made to the Government at the close of the war that that interest could not be assured unless the industry received some measure of protection against the long-established and scientifically based German competition, which the war could not crush. What was to happen?

In reply Mr. Runciman, President of the Board of Trade, said:

The Government would never have contemplated going into this matter had there not been an urgent need. Not a day passed but he received letters from users all over the country complaining bitterly either that they could not get the dyes, or that prices had gone up to such an abnormal figure. It was doubtful whether more than 7 1/2 per cent. of the total aniline dye consumption of this country was not being made here. It might possibly, by arrangement and reorganization, be raised to as much as 12 1/2 per cent. Still, the shortage was pronounced, and would remain so. . . .

Since the war Germany had not only entirely stopped the sale of dyes to this country, but had prevented any dyes being sold in neutral markets that could find their way here. Steps had already been taken that would help, to some extent, to provide a larger supply, but when all was said and done the largest amount of supply we could work up under this temporary arangement would not give us one-third of the total annual consumption. It was essential for the prosperity of a great portion of the industry, if not the whole, that the supply of dyes should be increased. He took steps to get the best advice on the matter. No one could tell exactly what would be the position after the war. If, however, we were to go on being dependent in the larger portion of our textile trade on supplies which Germany had the power to cut off whenever she pleased, we left that industry in a state of peril, and we should certainly be lacking in foresight if we were not prepared—within the bounds of fiscal principles on which both his honorable friend and himself were agreed—to take the steps necessary to put a stop to entire dependence, for what was, after all, the greatest of our manufacturing industries on commodities entirely under foreign, and perhaps hostile control.

It is impossible to give full information on a scheme that was only in the embryo stage. As regarded the conditions, the Government must be assured that those who asked for anything like a national organization for the production of dyestuffs should themselves give a pledge that they meant the thing to succeed. There are two ways of doing that—(1) the whole of the ordinary capital should be put up by the consumers; (2) those who expected to get national assistance in a matter of this kind should give an undertaking that they were going to go on buying their dyestuffs from this cooperative concern. The principle on which that large and prosperous organization, the Wholesale Cooperative Society, was conducted, was not altogether different. If consumers would themselves subscribe £3,000,000 he should be prepared—providing there was the necessary amount of Government control—to ask his colleagues to guarantee the debenture interest of another £1,500,000 He should regard the three million as a Government pledge from the consumers that they were bona fide interested in the success of the undertaking, and they ought to supplement that by undertaking that they would buy the dyestuffs for a long period. Could the scheme pay? In Mr. Sherwell's own constituency there was a concern that paid very well.

If those interested in the project were going deliberately to default on the debenture interest in order to fall back on the Government guarantee they would go without interest on the whole three millions. Of course we always ran the risk of an appeal for protection. Every trade was represented in the appeal for protection three years ago. He should greatly deprecate any Government control in the manufacture of these dyestuffs, but if the Government were to give a guarantee of this debenture issue the Government must have two nominees on the board, with a right to veto on three points—(1) that the concern should remain permanently under British control; (2) that no arrangement should be made with any foreign producers as to keeping up the price of delimiting the area of activity; (3) a right of veto over all contracts, so that no large consumer should be given an advantage in price over the small consumer. He might add that he was informed that about one million employes were directly or indirectly interested in adequate supply of dyestuffs, and that the capital of that portion of the textile trade interested was about £200,000,000.

Three other members voiced rather faint protests against the proposal, and then the House turned its attention to other matters, leaving the Government free to develop its ultra-protective scheme.

Even more significant of the revolution that is now under way in British opinion on protection and free trade was the discussion of the proposed government-owned dyestuff works before the Leeds Chamber of Commerce. The Lord Mayor (J. E. Bedford) began the discussion, giving an account of a conference on the proposed scheme between representatives of the Government and of the Chamber. F. Wardle followed the Lord Mayor by advocating a protective tariff instead of the scheme of government ownership:

I regret that there was no hope of getting the Government to agree to the simple method of putting a duty on these colors for some years after the war was over. He did not want to say a word against the suggested scheme of the Government, as far as they knew it, because failing protective duties it was a desirable scheme, and he had sufficient knowledge of business on the commercial side to be able to say most emphatically that the people who put their money into it would do well, besides materially assisting the country. The unfortunate thing about the scheme was that it was rather likely to interfere with private enterprise. If there had been a duty of 20 or 30 per cent. the concerns at present engaged in the trade would have been able to increase their output, and others would have arisen, and foreigners would very soon have been making colors in this country.

Rudolph Beckett voiced the general sentiment in favor of protection in these words:

I am thoroughly agreed with the opinions I have heard expressed all round that the only safe and thoroughly efficient way of securing the industry on a permanent basis was some form of protection after the war. If that was not done—I have been told by people who understood it—we should be up against two considerations. One was that the Germans by their enterprise in this manufacture, and their practice and efficiency during a great number of years, could and would for some time be able to produce a very large number and a much greater variety of colors than the newly formed English company could. Therefore, having this weapon in their hands, they would say, when the war was over and any Englishman wished to buy one of the colors which could not be produced here, "No, I won't let you have this color which you cannot produce unless you will undertake to buy those which you can produce."

Mr. Wardle—They have done that already.

Mr. Becket—The only adequate means of getting the industry on a permanent footing was some form of protection. It was rather like running one's head against a stone wall to say that, for every Government official said it was almost hopeless to expect the Government to fall in with that idea. He hoped, however, the Chamber would continue to press the matter on those lines.

Jonathan Peats made this objection to government ownership:

Centralization of the industry in the manner suggested could be at all conducive to local enterprise. Government control would leave manufacturers between two fires—outside competition and the competition of the established industry. Unless there was some modification of the scheme, instead of encouraging competition it would discourage private effort in the matter of research and development.

The Lord Mayor at this point came out squarely in favor of protective tariff:

The imposition of a 30 per cent. duty would have been the best way to foster the industry in its initial stages. That duty might be withdrawn in years to come, when it was seen that the new industry was on its feet.

J. McLaren closed the discussion with this forcible appeal for protection:

After the war the proposed large company would be subject to the competition of the Germans. The Germans had their factories established on a large scale, with cheap labor and experience, and they would be able to flood this country with their products. It might answer for this purpose to see those products sent here at a loss for some time. But I don't see how this little child of the Government is going to stand up against the Government giant, which has all the traditions and all the experience at its back, and will be able to undersell our Government company in this country. They had better take the bull by the horns, and give protection now, so as to secure development in our own country rather than, in self-protection, to have to put a duty on later.

The published report of the Leeds discussion discloses no word of objection to a protection. All the speakers were united in their criticism of the Government's plan, which, in its endeavor to avoid a protective tariff, is ready to take a step far in advance of protection by establishing an actual partnership between Government and individuals in manufacturing British dyestuffs.

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Wool, Tops and Yarn

The imports of wool, tops and wool yarn for the four months ending October, 1914, are reported by the Bureau of Foreign and Domestic Commerce as follows:

Clothing and Combing Wool, Free		
July ..... lbs.	13,680,588	$4,720,650
August	11,700,980	3,089,974
September	9,096,205	2,315,488
October	7,543,479	1,844,032
Carpet Wool, Free		
July ..... lbs.	6,150,565	$1,028,569
August	4,777,641	769,841
September	4,705,674	773,637
October	3,942,256	641,568
Mohair, 15 per cent. ad val.		
July ..... lbs.	309,250	$101,930
August	238,490	93,848
September	407,651	141,040
October	470,995	169,545
Tops, 8 per cent.		
July ..... lbs.	1,064,988	$578,152
August	369,230	191,774
September	563,477	270,546
October	433,688	192,899
Yarn, 18 per cent.		
July	755,956	$544,974
August	307,825	223,713
September	277,355	186,235
October	374,420	247,759

Marketing Cotton Goods in Indla

The following interesting account of the method of marketing cotton goods in India is taken from a letter received by a Manchester (Eng.) merchant from his correspondent at Calcutta, and published in the "Guardian".

The Marwarri Chamber of Commerce has announced that all the piece goods dealers in the market have signed an agreement which, among other things, stipulates that no dealer need take delivery of any piece goods unless he wishes to do so for a period of two months, and if any office should press a dealer to take delivery or resell the goods elsewhere or charge the dealer interest for the two months, that office will, in future, be boycotted. Up to the present offices have ignored

EXPORTS AND IMPORTS OF RAW WOOL, YARN AND WASTE.

Lbs. in units of one million. Value in units of $100.000.

Year Ending June 30.	EXPORTS.		IMPORTS.					
	WOOL.		WOOL.		SHODDY, NOILS, ETC.		YARN.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
1890	.231	.335	106.3	152.6	5.0	20.5	3.5	19.9
1891	.291	.394	129.3	182.4	1.2	4.3	2.0	11.9
1892	.202	.306	148.7	196.9	.3	.9	1.3	7.5
1893	.091	.148	172.4	210.6	.3	1.1	1.2	6.9
1894	.520	.906	55.2	61.1	.1	.5	.5	3.6
1895	4.289	4.844	192.8	229.9	14.1	19.8	2.4	11.7
1896	6.945	8.559	228.4	315.0	18.7	26.5	2.0	10.5
1897	5.271	6.199	366.6	567.5	49.9	69.3	1.8	9.6
1898	.121	.180	132.8	167.8	5.3	6.9	.3	1.9
1899	1.683	2.373	76.7	83.2	.3	.7	.2	1.1
1900	2.200	3.872	155.9	202.6	.4	.9	.2	1.3
1901	.200	.240	104.0	125.2	.6	1.8	.2	1.5
1902	.123	.133	166.2	177.1	.2	.6	.4	1.9
1903	.518	.718	177.1	221.5	.3	.9	.3	1.9
1904	.319	.371	173.7	248.1	.2	.5	.1	1.1
1905	.123	.150	249.1	462.2	.2	.8	1	1.2
1906	.192	.290	201.7	390.7	1.2	4.3	.2	1.6
1907	.214	.488	203.8	415.3	.6	2.7	.1	1 5
1908	.182	.421	125.9	236.6	1.2	1.2	.2	1.5
1909	.028	.047	266.4	451.7	.5	1.4	.3	2.3
1910	.047	.010	263.9	512.2	.	..	..	..
1911	..	..	137.6	232.2	..	..	..	..
1912	..	..	193.4	330.8	..	.	..	..
1913	..	..	195.3	355.8	..	..	..	..
1914	..	..	237.6	531.9	..	..	..	..

EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100,000.

Year Ending June 30.	EXPORTS—VALUE.							IMPORTS—VALUE.							
	Carpets.	Dress Goods.	Flannels and Blankets.	Apparel.	Rags.	Other.	Total.	Carpets.	Cloths.	Dress Goods.	Shawls.	Clothing.	Knit Goods.	Other.	Total.
1890	.067	..	.409	3.179	..	.719	4.374	7.5	161.4	242.0	10.1	18.4	19 8	66.2	525.4
1891	.184	..	.265	4.240	..	.502	5.191	13.7	120.3	182.4	7.2	18.6	12.5	39.7	394.2
1892	.093	..	.244	2.689	..	.649	3.675	12.9	127.6	164.7	3.5	14.8	11.6	12.1	347.4
1893	.115	..	.242	2.222	..	.679	3.260	15.8	151.2	164.8	2.8	11.7	14.1	12.0	372.4
1894	2.500	..	.387	3.172	..	1.685	7.744	9.6	67.6	85.8	1.6	8.6	10.0	7.2	190.8
1895	1.610	..	.498	3.161	..	1.432	6.701	13.6	163.0	144.0	2.0	10.0	9.4	11.8	353.5
1896	2.252	..	.370	3.653	..	2.860	9.135	8.9	218.9	199.3	4.5	13.0	25.4	27.4	497.4
1897	1.895	..	.573	2.858	..	3.150	9.476	7.8	170.1	107.9	4.6	9.8	25.3	27.0	412.4
1898	1.612	.414	.474	4.290	..	4.074	10.89	17.9	39.6	60.4	.4	7.6	3.9	9.6	139.5
1899	.811	.169	.427	5.388	..	3.679	10.47	17.6	39.1	59.1	.5	8.3	6.3	5.6	136.5
1900	1.150	.244	1.002	5.654	..	4.485	12.54	27.5	51.3	58.7	.8	9.9	5.0	6.3	159.1
1901	1.051	.082	1.230	8.060	..	5.006	15.43	27.0	39.6	53.7	.8	11.7	4.1	5.3	142.4
1902	.867	.070	.883	8.521	..	4.780	15.12	34.4	48.0	64.0	.5	13.3	5.7	5.2	171.4
1903	.579	.074	.481	12.908	..	3.187	17.22	37.5	48.6	75.1	.5	19.2	6.7	4.7	196.
1904	.509	.078	.105	14.577	..	3.663	19.87	27.9	41.5	82.0	.5	13.0	5.1	5.2	175.2
1905	.646	.155	.815	16.244	..	2.488	20.35	28.7	39.7	86.1	.6	13.7	2.2	5.4	178.2
1906	.573	.164	.724	16.184	..	3.549	21.19	46.4	51.6	100.5	·5	16.3	2.7	7.	225.9
1907	.577	.056	.549	16.887	..	4.319	22.38	44.3	57.3	92.4	..	16.7	2.1	6.0	218.8
1908	.630	.136	.350	17.178	..	3.981	22.19	27.9	48.6	92.2	..	16.2	.35	7.3	192.6
1909	.666	.138	.493	14.201	..	4.220	19.72	40.3	47.8	67.6	..	14.2	.6	6.8	177.3
1910	.571	.279	.690	15.551	..	6.600	23.69	45.9	64.2	93.7	..	18.1	.17	13.8	235.1
1911	..	..	..	..	14.504	..	8.429	22.93	38.1	51.4	62.6	..	22.7	..	10.8	185.6
1912	..	..	..	..	17.43	..	7 918	25.34	38.5	46.3	32.7	..	21.7	..	9.8	149.1
1913	..	..	..	..	24.60	9.23	10.99	44.83	48.9	48.9	33.2	..	21.6	..	10.5	163.2
1914	..	..	..	..	21.5	9.7	16 7	47.9	44.5	123.8	67.6	..	22.7	..	55.3	342.9

the announcement, but dealers are not taking delivery, and although this has caused a good deal of inconvenience it has to some extent arrested a rule, we sell to dealers that may be styled "first class dealers," they resell to smaller men whom we will call "second-class dealers," at a small

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30	Exports.									Imports.				
	Sea Island.		Other.		Total.			Cotton Waste.		Raw Cotton.			Cotton Waste.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Value per lb.	Lbs.	Value.	Lbs.	Value.	Value per lb	Lbs.	Value.
1890	9	23	2462	2486	2471	2509	10.15	..	..	8.6	13.9	16.16	..	..
1891	14	31	2893	2876	2907	2907	10.00	..	..	20.9	28.2	13.49	..	..
1892	19	16	2926	2568	2945	2584	8.77	..	..	28.7	32.1	11.18	..	..
1893	8	17	2204	1870	2212	1887	8.53	..	..	43.4	46.9	10.80	1.9	.8
1894	14	29	2669	2080	2683	2109	7.82	..	..	27.7	30	10.83	2.7	.9
1895	15	28	3502	2021	3517	2049	5.82	..	..	49.3	47	9.53	2.9	1
1896	19	38	2316	1862	2335	1900	8.13	..	..	55.3	66	11.93	6	2.1
1897	21.	41	3082	2268	3103	2309	7.12	..	.	51.9	59	11.36	5.3	1.7
1898	16	28	3834	2277	3850	2304	5.98	19.1	7.9	52.7	50	9.48	6.7	1.5
1899	14	24	3759	2072	3773	2096	5.55	21.1	8.3	50.2	50.1	9.98	6	2.1
1900	18	30	3082	2388	3100	2418	7.80	38.6	17.7	67.4	79.6	11.81	7.9	2.4
1901	11	22	3320	3137	3431	3137	9.41	50.6	26.3	47.0	68.0	14.46	6.2	1.9
1902	12	24	3488	2881	3500	2906	8.30	43.9	16.4	98.17	117.1	11.89	14.3	5.0
1903	20	40	3522	3121	3543	3161	8.92	49.1	21.7	75.40	109.7	14.41	23.2	8.0
1904	13	31	3049	3676	3062	3707	12.01	52.7	28.2	48.84	85.4	17.47	20.8	8.4
1905	16	33	4288	3765	4304	3799	8.82	53.9	24.7	60.5	94.1	15.57	24.3	12.4
1906	16	33	3617	3977	3634	4010	11.03	37.8	18.5	70.9	108.8	15.33	26	13.6
1907	7	20	4519	4800	4524	4820	10.65	46.0	23.6	104.7	199.3	19.03	22.9	10.4
1908	12	33	3804	4344	3816	4377	11.47	45.8	26.3	71.0	141.7	19.95	10.7	4.45
1909	10	20	4438	4153	4448	4174	9.36	41.8	21.3	86.5	136.2	15.74	28.9	1.22
1910	11	32	3195	4472	3206	4504	14.4	54.3	31.2	86.	158.1	18.3	35.7	15.79
1911	8	23	4025	5830	4040	5853	14.4	49.	35.	113.7	247.7	21.7	56.3	29.4
1912	10	24	5524	5634	5535	5658	10.2	62.	35.1	109.7	202.1	18.4	34.4	16.4
1913	4	10	4557	5462	4562	5473	11.09	78.	44.5	121.8	229.9	18.8	44.7	21.3
1914	7	16	4753	6088	4760	6104	12.8	67.	45.6	123.3	194.5	15.7	26.8	12.9

EXPORTS AND IMPORTS OF MANUFACTURED COTTONS.

Value in units of $100,000.

Year Ending June 30	Exports — Value.					Imports — Value.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored.	Apparel	Laces, etc.	Thread.	Knit Goods.	Other.	Total.
1890	29	55	2	14	100	33.7	1.3	3.4	114.5	9	71.5	65.8	299.2
1891	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	297.2
1892	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	283.1
1893	28	63	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894	38	76	5	24	143	33.8	1	14.6	80.2	3.3	43.6	45	223.5
1895	35	70	5	28	138	54.3	1.2	27.7	118.9	6.6	65.4	59.9	332
1896	34	95	7	32	168	49.2	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898	41	92	9	25	167	53.1	1.2	10.5	117.7	6.9	40.3	42.9	273.6
1899	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	320.6
1900	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
1901	66	76	17	33	192	59.2	2.0	15.3	202.3	17.5	55.0	51.4	402.7
1902	74	185	20	34	313	69.3	.9	16.5	224.5	19.2	53.6	60.4	444.4
1903	84	169	26	30	309	90.1	1.5	22.5	251.1	24.2	61.6	73.6	524.6
1904	54	92	27	34	207	81.4	1.5	25 0	248.4	22.6	60.4	55.6	494.9
1905	73	339	34	35	496	77.9	1.5	23.8	259.1	22	61.5	43.2	489.7
1906	69	363	43	36	510	117.2	2.1	29.1	340.2	26	72.2	43.5	630.3
1907	75	136	47	35	293	127.2	2.8	37.7	397.5	35.8	86.7	39.4	727.1
1908	58	84	47	31	271	120.8	3 4	41.9	346.1	39.2	90.3	52.	693.7
1909	72	145	10	70	297	99.	2.9	27.2	313.7	33.1	69.2	45.	620.1
1910	85	113	57	41	296	84.	5.8	38.6	368.2	43 1	64.6	59.3	664.7
1911	105	138	71	77	391	83.3	4.7	39.8	359.2	42 1	41.7	69.5	640.3
1912	115	197	89	104	507	73.4	4.2	36.3	376.9	40.3	32.5	93.9	651.5
1913	126	180	110	62	478	72.3	4.3	42 8	357.7	44.5	30.9	55.4	606.6
1914	116	171	108	58	453	113.6	4.7	28.9	338.6	38.8	56.7	84.4	665.7

the fall in prices. It is hard to account for the absolute stagnation of the trade, but the following reasons have all helped to depress the market. As

profit, and the second-class men sell to a retail dealer, who takes only one package at a time and takes that package on credit. The retail man is

a person without ny capital as a rule, and he does not pay until he sells his goods, or, at any rate, part of them. The second-class dealer gives him so many days in which to do this, and in the meantime the retail man gives the second-class man a promissory note for the value of his purchase. The second-class dealer takes the promissory note to a native shroff (capitalist), who advances him money on it on his guaranteeing the account. With this money the second-class dealer pays the first-class dealer, who in turn pays us. After the shroff has advanced money to the second-class dealer he takes the hundi to one of the banks and guaranteeing the paper himself the bank advances money to him (the shroff).

Since the outbreak of war banks have refused to advance money on hundis, and so the shroffs have in their turn refused to advance money, except on very good security in goods, smaller dealers, and this has compelled the second-rate dealers to sell only to such retail men as can pay for goods on delivery. The retail men who can and will pay on delivery are very few indeed, so that the action of the banks in refusing to advance money on hundis has stopped the natural flow of trade, and almost paralyzed business. In addition to this there has been a terrible slump in the jute and seed trades, etc., and the export trade as a whole has suffered severly through the lack of adequate shipping, owing to the Government's chartering so many ships for transport duty and also through the raids of the German cruiser Emden.

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The Textile Trade in Germany

The prostration of the German textile industry since the war began is shown by the statement of new enterprises and increase of capital for the third quarter (July, August and September), published in the "Wochenberichte der Leipziger Monatschrift fuer Textil-Industrie." This quarterly period includes the month preceding the declaration of war, which probably explains the insignificant fragment of new business recorded for 1914. A melancholy accompaniment of this financial report, in the same issue of the "Wochenberichte," is the list of textile manufacturers who have "died the hero's death in defense of the fatherland." In this list is the son of C. O. Langen, a cotton spinner of M. Gladbach, whom we met at the Manchester Cotton Congress in 1905.

The financial report is as follows:

The war has almost put an end to new enterprises in the textile industry. The new investments in textile mills show a tremendous shrinkage for the third quarter of 1914. There was no new textile corporation formed in this period and no corporation increased its capital. The amount represented by new enterprises and increase of capital was 1,050,000 marks ($252,000), as compared with 18,720,000 marks ($4,492,800) in the corresponding period of 1913. The year 1913 showed a decided increase as compared with previous years. New enterprises and increases of capital for the third quarter for a series of years are shown in the following table:

	1907	1908	1909	1910	1911	1912	1913	1914
	(In units of $100,000)							
New enterprises	21.1	11.1	14.8	22.7	22.4	13.6	35.2	1.3
Capital.....	3.7	.8	9.3	6.	6.2	4.2	9.7	1.2
Total of new investments....	24.8	11.9	24.1	28.7	28.6	17.8	44.9	2.5

GERMAN INDUSTRIES AND THE WAR

The censor has allowed the outside world to obtain but little information as to the condition of manufacturing and trade in Germany, although it has been certain that the war would cause great demoralization in that country owing to the extent to which the Allies were able to interrupt foreign trade. A significant disclosure of the actual situation is made by the "Wochenberichte der Leipziger Monatschrift fuer Textil-Industrie" of November 25, which contains a petition addressed to the German Government by the "Verein der Deutschen Textilveredlungs-Industrie" praying for some relaxation of the war measures that have been adopted. What is known as the "Veredlung-Industrie" is the working of foreign materials, either raw or partly manufactured, into an advanced state of manufacture and their exportation. The German tariff contains special provisions for admitting these products free of duty on condition that they are exported after being subjected to some manufacturing process, the object being to increase the amount of work done in Germany. In this way, for example, foreign yarn may be imported, dyed or mercerized, and then exported to the profit of German dyers. The petition of the "Verein der Veredlung-Industrie" is as follows:

The "Vereins der Deutsche Textilveredlungs-Industrie" desires to place on record a statement of the effect of war conditions on the German "Textilveredlungs" industry, while expressing full confidence in the measures thus far taken by the Imperial and State governments. We ask that all possible means be utilized to keep our industry employed. Following are our requests:

1. Facilitate the importation of the most important raw materials and manufacturing supplies and particularly dyewoods and tanning materials; prohibition of the exportation of dyestuffs to the enemies' countries, and the restriction of exportations to neutral countries so long as German re-

quirements have not been covered and the interests of the German chemical industry are not injuriously affected.

2. Provide for credit facilities in the important branches of the weaving industry in order to contribute to the above objects and also to aid the importation of raw materials for weaving and the exportation of woven goods, as has been done for other industries.

3. That no further measures for the protection of the "Textilveredlungs" industry be adopted which injure the kartels (industrial and trade combinations).

4. The adoption of prompt and thoroughly effective measures for preventing an increase in the cost of living, particularly in the cost of the necessities of life, because such increase is the principal cause of the shrinkage in the demand for woven goods.

From this appeal it appears that, as a result of the war, even Germany has its dyestuff problem, due to the scarcity, not only of dyewoods, but of the artificial dyestuffs in the manufacture of which German works possess a practical monopoly.

GERMAN COTTON YARN AND THE WAR

The advance in the price of cotton yarn in Germany since the war is shown by the following quotations at the Stuttgart Bourse on July 13 and November 2. The German prices have been reduced to cents per pound:

	July 13	Nov. 2
20s warp ring	19.6 to 20.	24.4 to 25.1
20s weft ring	19.4 to 19.8	24.2 to 24.8
30s warp ring	22.2 to 22.7	27.5 to 28.1
30s weft ring	22 to 22.4	27.3 to 27.9
36s warp ring	22.9 to 23.3	28.1 to 28.8
42s weft ring	22.9 to 23.3	28.1 to 28.8
44s weft ring	23.3 to 23.8	28.6 to 29.3
50s weft ring	27.7 to 28.1	32.9 to 33.6
20s weft mule	19.1 to 19.6	24.2 to 24.8
40s weft mule	23.8 to 24.2	29 to 29.6

The terms of sale on which the quotations are based, are 2 per cent. 30 days from date or net 3 months with the consent of the seller. No discount is allowed on payments made after the expiration of the 30 days. The report of the Stuttgart market on November 2 has this note annexed: "Strong demand and very small offerings owing to the scarcity of cotton."

In this connection it is interesting to note that the German chaos of weights and measures continues in war as well as in peace. For example, the reports of the cotton yarn and cloth markets at M. Gladbach and Stuttgart in the "Wochenberichte der Leipziger Monatschrift fuer Textil-Industrie" of November 11, exhibit the following confusion of weights and measures:

M. Gladbach

Prices of 16 qualities and counts in marks per English pound.

Prices of 24 qualities and counts in marks per German pound (1/2 kilo).

Stuttgart

Prices of 10 qualities and counts in marks per kilogram (2.2 English lbs.).

Prices of 1 qualities and counts in marks per English pound.

Set of grey cotton cloth given in threads per 1/4 French inch.

Prices of grey cloth given in marks per meter.

The sizes of all cotton at both M. Gladbach and Stuttgart are given in English counts based on 840 yards per pound.

One uniform feature of this German chaos of cotton weights and measures is found in the use of the English yarn count.

A MAXIMUM PRICE FOR WOOL

The raw cotton and wool trades have presented some striking contrasts in different parts of the world since the war obstructed the regular channels of commerce. In this country the producers and holders of cotton have been clamoring for a minimum price on the product they have for sale, while in Germany the buyers of wool are making equally strenuous appeals for a maximum price on the material they want to buy. The "Zeitschrift fuer die gesamte Textil-Industrie," Leipzig, in a recent issue had this to say on the question:

In accordance with numerous and widespread demands, negotiations are under way with the object of fixing a maximum price for wool. There is no doubt, however, that such a measure applied to raw wool will result in very serious difficulties. The great variation in grade and condition, not only of German, but of foreign wool due to climatic and other causes, make it impracticable to establish an approximate price as is done with other raw materials and agricultural products. The wide fluctuations in the price of German wool are indicated by the quotations for North German fleece wool at Berlin in 1885 when it sold at 267.5 marks per quintal (29 cts. per lb.), whereas in 1912 the price of the same grade of wool was 344.2 marks per quintal (37 1/2 cts. per lb.). In 1885 the Bremen price for washed Buenos Aires wool was 343.7 marks per quintal (37.4 cts. per lb.). In 1890 it was 403.8 marks (44 cts. per lb.). In 1903, 375.9 marks (41 cts. per lb.); in 1912, 406.6 marks (44.3 cts. per lb.).

In 1889 the highest price for extra super snow white cape at London was 26d. (52 cts. per lb.), the lowest in 1895 14d. (28 cts. per lb.). In 1899 the highest quotations for Buenos Aires wool was

9 1/2d. (19 cts.); in 1895 the lowest was 4 3/8d. (8 3/4 cts.) per lb.

These few examples are enough to show the wide fluctuations to which the price of wool is subject. This year's prices for German wool and the London price for foreign wool would naturally be accepted as a basis for determining the maximum price, but the war has caused such a disturbance of the trade by reason of the difficulty of production, the restricted imports and the impossibility of seasonable and proper shearing that so easy a solution of the problem does not seem possible, especially in view of the fact that all of the conflicting interests in the trade must be protected.

The quotations in the same journal for the principal textile materials in Germany on July 25, just before the war, and on November 21, fail to show an advance in wool prices that would warrant the fixing of a maximum limit. It is probable, however, that the quotations are largely nominal owing to the scarcity of wool and the lack of sales, and that the demand for a maximum price is the result of the excessively high prices demanded by holders of wool, but not paid. The quotations from the "Zeitschrift" are as follows:

	July 25 cts. per lb.	November 21 cts. per lb.
RAW COTTON		
Middling American	14·9	..
Bengal fine East India	8·3	..
COTTON WASTE		
Greasy	3·4– 3·7	4·4– 4·9
Sorted extra	3·8– 7·9	5· – 9·4
India willow	3·6– 6·8	..
American strips	8·4–11·3	10·3–13·9
Linters	3·6– 7·	..
WOOL		
Greasy	12·7-22·7	15·4–26·3
Snow white cape	33·6–43·5	37·2–50·9
La Plata in grease	42·7–61·8	47·2–81·8
TOPS		
La Plata	60·5–	..
RAGS		
Old cloth, fine	2·6– 3·9	3·2– 4·7
New cloths	5·7– 6·5	6·7– 7·8
Fancy knit	5·8– 9·3	7·4–12·
Thibets	4·1– 6·6	4·7– 7·6
JUTE	6·2–	
SILK		
Raw	$4.54–	$3.89–$4.16
Tram	3.28–$4.50	3.23– 4.48
Organzine	4.61– 5.05	4.21– 4.71

WORSTED CLOTH FOR THE GERMAN ARMY

The supply of carded woolen goods having been found insufficient to meet the demand for clothing German troops on the field, the German War Department has issued the following order for the use of worsted fabrics to supply the deficiency:

To meet the requirements for military cloth to clothe the troops, the War Department gives permission to use worsted fabrics as substitutes for carded woolen goods, in accordance with special specifications received. The orders for worsted cloths will be given by the War Department direct to the Kriegsweberverband, Friedrichstrasse 180, Berlin, W., a newly organized corporation, which will in turn distribute the orders to the mills in proportion to their productive capacity. Weavers of worsted goods who desire army contracts should make application to this corporation.

The corporation mentioned in the order has a capital of 6,250,000 marks ($1,500,000) and is to handle the purchase and distribution of worsted wool for army goods. It is managed by a committee and the business is conducted with profit. Heretofore carded woolen cloths have been used exclusively for clothing the German army. The special specifications mentioned in the order for the use of worsted are for the purpose of making the worsted fabrics better adapted for the requirements of army service.

THE GERMAN FOREIGN TRADE IN WOOL

During the six months ending June 30 this year the excess of German imports of wool over exports was 40,504,300 pounds greater than for the corresponding period of 1913. The figures are as follows:

First Half

	1914	1913
Imports ....lbs.	331,533,620	293,488,360
Exports	19,001,180	21,460,220
Excess of Imports ....lbs.	312,532,440	272,028,140

Seven-eighths of the wool imported in the first six months of 1914 came from Australia, New Zealand, South Africa and South America. It is interesting to compare the quantity imported into Germany from British territory with that brought from South America in the respective half years:

	1914	1913
British ....lbs.	175,374,320	147,436,300
South American	100,369,940	104,324,440

These figures possess peculiar interest in view of the importance of wool in the military operations that began on July 31, one month after the six-month period covered by the report.

A RULING AFFECTING OWNERS OF TRADE MARKS

Boston, Mass., Dec. 24, 1914.

Editor Textile World Record:

Under a well established rule of the trade mark division of the patent office, originating under the 1881 statute, the trade-mark registrant (the person to whom a certificate of registration is issued) heretofore has been given the benefit of the doubt whenever the subject matter of a later application possessed a sufficient degree of similarity to raise the question of "anticipation" in the mind of the trade mark examiner. Under such conditions the application has been rejected.

This rule favoring the registrant has been recently reversed. The doubt is now resolved in favor of the applicant who later seeks registration for a trade mark closely resembling a mark previously registered. An insistent effort made by an applicant to register the words "Old Mission" for lager beer, notwithstanding the prior registration of the word "Mission" for a malt extract, led to the reversal of the old rule. The examiner rejected the application, believing the term "Old Mission" to be a colorable variant of "Mission." On appeal, the Commissioner reversed the decision of the examiner, allowed the application for "Old Mission" to be published and at the same time laid down the new rule.

In a few words, the new rule is based upon the theory that the privilege granted the registrant (or in fact any owner of a trademark) under the trade mark statutes, of opposing the registration of any mark which would injure him, places upon the registrant or owner the duty of discovering the official publication of the mark and opposing it; or to state the theory differently—the privilege of opposing registration to another, carries with it an implied obligation to exercise the privilege. Practically speaking, the trademark owner is expected to be sufficiently interested in his property to utilize the means provided by the statutes to prevent the registration of a mark, if he deems the registration will injure him.

As will be appreciated, this new rule places the burden of preventing the registration of a conflicting mark directly upon the owner. Therefore every trade mark owner —whether his mark is registered or not— should review the weekly published trademark applications of the Patent Office, in order that he may discover and oppose any mark, the registration of which would injure him and necessitate tedious and expensive cancellation proceedings.

In the matter of trade marks the business man is presumed by law to know: (1) That under the precedent of this new ruling the Patent Office will pass applications which formerly would have been rejected. (2) That all trade marks are officially published 30 days before registration. (3) That every trade-mark owner has the right to oppose the registration of a mark which would damage him. (4) That the "opposition" must be recorded within 30 days from date of publication or the conflicting mark will be issued.

"Ignorance of the law excuses no one."

Henry C. Thomson,
Trade Mark Specialist.

WOOL STATISTICS

The Boston Wool Trade Association has issued the following report of wool unsold at Boston:

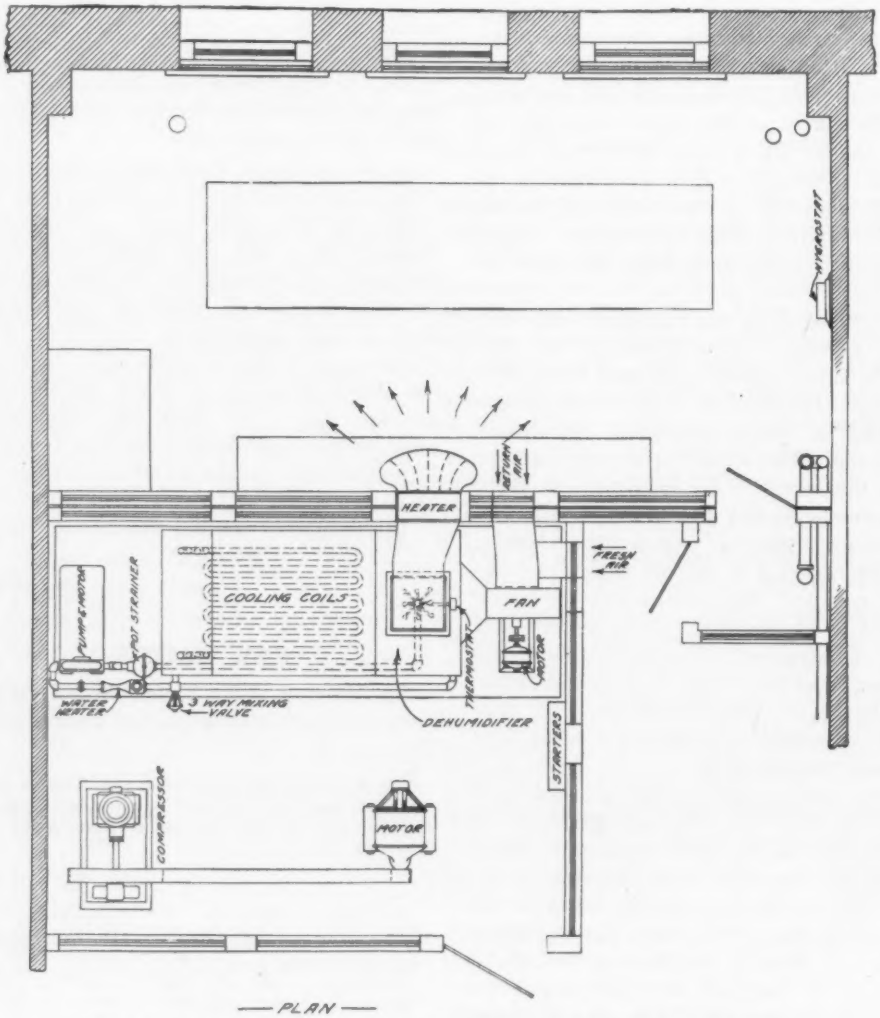
The stock of unsold wool in the Boston market Dec. 26, 1914, as computed by the Cooley & Marvin Co., accountants for the Boston Wool Trade Association, is as follows:

	Dec. 26, 1914 lbs.	Jan. 1, 1914 lbs.
Territory, California, Texas	18,789,052	23,627,371
Fleeces (grown east of the Mississippi River and Minnesota, Iowa and Missouri)	3,632,250	1,348,029
Scoured (Tops, noils or waste not included)	2,397,869	2,798,598
Pulled in grease)	1,563,164	2,656,457
Foreign, Class 1 and 2	1,178,115	10,550,064
Foreign, Class 3	779,858	2,820,030
Total	28,340,308	43,800,549

Edward R. Peirce,
Geo. W. Benedict,
Stock Taking Committee.

REGULATING TEMPERATURE AND HUMIDITY IN APPRAISING COTTON GOODS

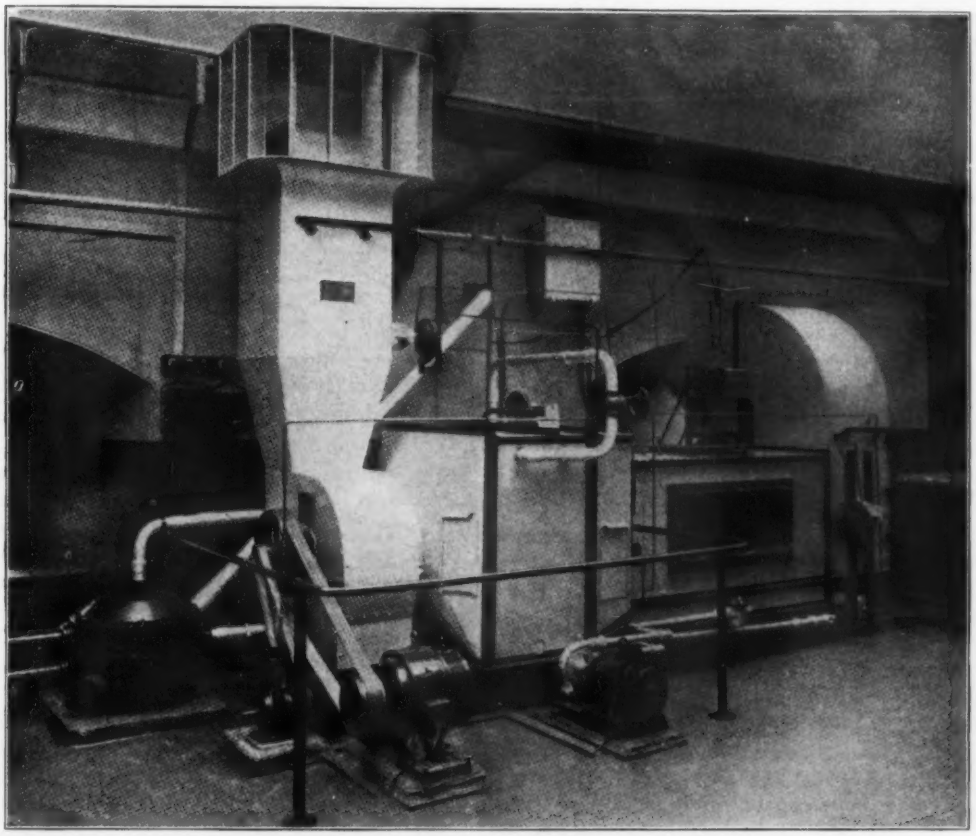
Contracts were recently made by the U. S. Treasury Department with the Carrier Air Conditioning Co., 39 Cortlandt St., New York, for an apparatus to be installed at the appraiser's warehouse in New York for regulating the temperature and humidity in the rooms where cotton yarn and cloth are tested for appraisal. As our readers know, the present tariff rates on cotton yarn and cloth are ad valorem and adjusted to the size or number of the yarn, the rates increasing with the fineness of the yarn. The yarn number which indicates the number of 840-yard hanks per pound, varies with the amount of moisture in the yarn, and consequently with the humidity and temperature of the air at the time the material is tested. As we showed in our April, 1913, issue, the variations of temperature and humidity at Boston would have caused 60s cotton yarn to vary from 57.4s on July 7, 1911, to 64.5s on January 8, 1912, a difference of 7 counts.



PLAN SHOWING TESTING ROOM AND CARRIER AIR CONDITIONING EQUIPMENT AT THE MANCHESTER TESTING HOUSE

It follows, therefore, that the Underwood tariff on cotton yarn will vary with the temperature and humidity at which the tests to determine the yarn number are made.

Moreover changes in temperature and humidity cause variations, not only in the number, but also in the strength of the cotton yarn, and strength is sometimes a factor in determining the value of cotton yarn, on which the Underwood rates are based. These changes in number and strength make it necessary to test cotton yarn and cloth at the appraiser's warehouse under standard conditions in order to keep the tariff rates uniform. The Carrier automatic air conditioning apparatus is to be installed at New York for the purpose of maintaining uniform temperature and humidity in the cotton testing room. Special Deputy Appraiser Henry M. Clapp informs us that the room in which the apparatus is to be placed is primarily for use in testing the strength as an aid in determining the quality, and therefore the value of cotton yarn. It will, however, also keep the yarn number uniform, and can be used in place of drying the material to bone dryness if it should be found necessary.

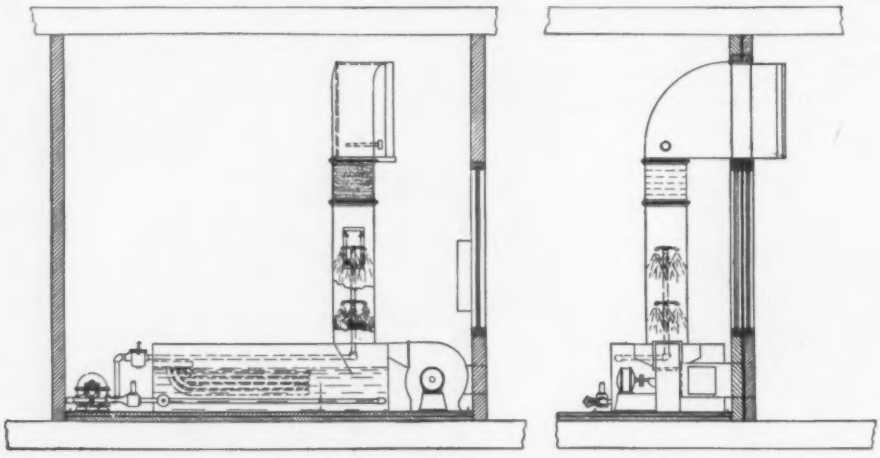


THE CARRIER AIR CONDITIONING COMPANY'S EQUIPMENT IN THE TESTING HOUSE, MANCHESTER, ENGLAND

The Treasury Department made a careful investigation before contracting for this installation and the final selection was influenced by the fact that the Manchester (Eng.) Testing House and Laboratory has for some time been using a Carrier apparatus for regulating humidity and temperature when testing yarns and fabrics for size and strength. The apparatus at Manchester is shown in the accompanying illustrations.

The operation of the apparatus is as fol-

lows: The air is drawn from outside the room or recirculated from the room by a conoidal fan and forced through the air-washing and humidifying chamber, which it leaves in a saturated condition but free of entrainment. It is then passed through the coils for heating when necessary and is distributed by a diffuser to all parts of the room. The automatic control consists of a Carrier wet and dry bulb regulator which operates a valve on the steam supply of the heating coil to regulate the temperature, and the fresh and return air dampers with the steam supply to the water heater of the humidifier to regulate the humidity in winter.



ELEVATION SHOWING CARRIER HUMIDIFIER AT THE MANCHESTER TESTING HOUSE

In summer to reduce the humidity a York vertical refrigerating machine is used to cool the water, which condenses the excess water vapor out of the air. In this way the conditions of temperature and humidity in the testing room are kept constant at all times, and the strength, as well as the indicated yarn number of any given sample will be the same regardless of the changes in atmospheric conditions outside.

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Wool which is shorn from the britch of the sheep a few months before shearing is called "crutchings." Crutching, as this shearing is called, is done to keep the maggot fly from the sheep.—From the Australian Sheep and Wool Industry.

WILD ANIMALS AND WOOL

San Antonio, Texas, Dec. 21, 1914.

Editor Textile World Record:—

I have read with very great interest the editorial on "The British Wool Embargo" in your December issue. In my opinion it voices the facts entertained by a large majority of the people in the United States. It seems that the very restricted conditions in which our manufacturers of wool goods are now placed in their efforts to obtain wool by reason of the European war, should be enough to convince the public that the only safety for the people of our country in this respect, is in producing its necessary supply of wool.

I enclose copy of a paper read by the president of the Texas Sheep and Goat Raisers Association before the Texas Farmers Congress on July 28 of this year, and which gives a concise account of the efforts made by this association during the past nine years to bring about the extermination of carnivorous animals that are so destructive, not only to the flocks, but to all kinds of live stock. I also enclose copy of the report of our State Comptroller dated April 18, which shows that our people destroyed 98,600 wolves and wild cats, (including 53 panthers and 22 leopards) between

September 1, 1912, the date on which the present law went into effect, and March of this year (eighteen months). Many thousands of these animals are yet alive in Texas.

It does not require a second thought to enable one to realize that the presence of such immense numbers of destructive wild animals has acted as a very expensive bar to an increase of the flocks in this State. Notwithstanding the fact that many of these animals remain in some parts of the State, they have been destroyed to such an extent in some of the best sheep growing and angora goat raising districts, that the flocks are being turned loose in considerable areas in what are termed sheep-proof fenced pastures (enclosed with a fence that neither a sheep nor goat can pass) to distinguish from wolf-proof fence, which affords some degree of safety from attack by these animals.

The opinion, long entertained by those engaged in the business here in Texas, has been fully proven in recent years, that the labor cost of caring for sheep and the angora goat in Texas under the pasture system (the wolf exterminated), is much less than under the herding system, and that the quantity and quality of both the fleece and carcass are much increased and improved. The cause of the long delay by the people in commencing an intelligent, systematic effort to exterminate the carnivorous wild animals in this State need not be explained. It is sufficient to call your attention to the extraordinary results coming from the application of the law, so soon after it was placed upon our State statutes. That the people are insisting that the extermintion of these destructive animals be completed at the earliest day practicable, is shown by the resolutions adopted by the Texas State Farmers Institute, in session July 17 and 18 last, (about 800 farmers from all parts of the State at the meeting), and the Texas Farmers Congress in session July 27th and 29th last (about 900 or 1,000 farmers in attendance), and the action of the Democratic party in State convention on August 12 last, as published in the San Antonio Daily Express. Copies of resolutions adopted by the Texas Farmers Institute and Texas Farmers Congress, and the Democratic party in State convention, are enclosed herewith.

This State has the capacity to sustain thirty to forty million sheep under the pasture system. I hope that you will call the attention of your readers to the waste which results from allowing a great State like Texas, having more than 4,000,000 people and returning nearly $3,000,000,000 worth of taxable property for assessment, to become overrun with such enormous numbers of wild animals.

Yours very truly,
Texas Wool Grower.

THE DYESTUFF PROBLEM IN ENGLAND

From an Address by Lord Moulton, Chairman of the British Dyestuff Committee, at Manchester

I wish to put to you in plain business language the things that have haunted me for these weeks past and oppressed my thoughts day and night. In my opinion, we are at a crisis of our national fate. When I began to investigate the question of the lack of dyes, I found England consuming £2,000,000 ($10,000,000) worth of dyes a year. Those dyes were essential to an industry of something like £200,000,000 ($1,000,000,000) a year, on which at least a million and a half of workmen were dependent. Of that £2,000,000 ($10,000,000) worth of dyes, barely one-tenth, was produced in this country. I looked around for industries which could, at a pinch, supply the deficiency, but so clearly demarked from other industries is the great chemical industry of the coal-tar dyes that I could find no industry which could take its place. I found that stocks of dyes were rapidly diminishing, and that practically Switzerland was the one nation from whom we could expect help. But I knew that there pressure was being put by Germany of the most intense kind—the threatening, and the carrying out of the threat, to stop all the supplies of intermediate products on which the Swiss dyemakers had built up their business—unless they would promise that not a pound of their dye should, for the whole period of the war, come into this country. Certainly, some English firms were manufacturing successfully, in spite of the

competition of the Germans, but their productions were altogether inadequate to keep the textile industries going.

I say gravely, meaning every word I say, that if peace were declared at this moment you in the English textile industry would be so much under the domination of the German dye producing industry that it could boycott the British industry and overcharge it in the supply of dyes, and it could hamper the industry pending the time when it could challenge its very existence.

Apart from certain business methods, which I may have to refer to later on, I believe that the sole cause of England's falling back and Germany's taking possession of this great industry is due to the fact that the Germans were prepared to undertake the intellectual study necessary to master the new science. The English could do it just as well; and you will find in their great works English chemists as highly respected as the German and as efficient. But, unfortunately, the holders of capital in England have had little sympathy with knowledge that they did not themselves possess. The consequence has been that great inventions have fallen dead in England. They have been offered in Germany, studied there by instructed minds, and accepted, and the consequence has been great industrial production, the fruit of which all the rest of the world has received. But in England—"Well, Ah! but it has not been tried"—difficulties are found, and the thing is dropped. For you must remember that because the masters, the capitalists, have not got sympathy with this self-preparation for the difficult task there is no career for the young men who are willing to study. They are paid salaries quite insufficient for the training they have gone through, and when I am asked how it is that we are so poorly represented in the industrial ranks by chemists, I say, "Make a career for your young chemists and then you will see." That, so far as is material, is the sole cause of the German supremacy. There is not one single thing in which we are at a disadvantage by natural possession. It is perfectly true that the most valuable deposit of potash is in the center of Germany, but potash could be got from elsewhere. As to coal and the sources of the coal-tar industry, we have them in richer quantity than Germany. The one thing is the difference in the human element, and that is not in intellectual capacity, but in the industry and willingness to study to the bottom the object with which you have to deal. Is that a cause which must permanently operate? The answer is no. But we shall not get a chemical industry like the German unless we train ourselves for it and have faith in it and embark our capital in it.

There must be a great national effort to create a company, a company working under the conditions of other companies, suffering from its blunders and profiting by its wisdom. But there are three conditions which must be satisfied or it will be a failure. The first condition is that it must be large. Sporadic and small attempts would be either dragged into a combine or crushed by a combine or in some other way put out of existence. It must be large, and therefore independent, and therefore beyond attack. It must also be national in the sense that it will be removed forever from the temptation to listen to the voice of the charmer inviting it to enter a combine.

The company must not only be powerful, but one, the loyalty of which was necessarily beyond all doubt, and that you can only get by Government assistance on the terms that the Government could stop it ever entering the backward path, which would ruin its national utility. It must also be cooperative. The producer must be the consumer, and you will never link all those industries unless those who used the dyes were interested in the production and therefore supplied a preferential market.

If I had all the millions needed for a company which would be untrammelled, and the shares of which would be sold on the Stock Exchange as ordinary industrials, and the profits of which would be squeezed out without regard to the future, I would say at once that it was predoomed to failure. Only by the union of producer and consumer can you defy Germany or any other competition. Some of you might say that that was a violation of the chief commandment, "You shall buy in the cheapest market," but in

considering cheapness it was the consequence of the purchase you have to look at. If you buy something which destroyed you it is not cheap, and I am sure that when the idea of loyal cooperation gets hold of Lancashire and Yorkshire the foes of England in the industrial world would begin to tremble. You must realize that there are conditions in industry which are equivalent to a state of war politically, and if the consumers allow the producers to go down under their enemies so that they in turn come under the same mastery, it is certain that they (the consumers) have bought in the dearest market and that they deserve the consequences.

If a company were formed under the conditions which I have laid down, I can promise it a long and successful life, but if any one of the three essentials—greatness, national control, and cooperation—is left out, it is predoomed to failure.

What would have been done to a War Minister who had bought in the cheapest market and had all the munitions of war manufactured by Krupps. There are munitions of peace which are essential for the defense of the great industries, and you have to take the same precautions as to these as in the case of munitions of war. So far as possible a country should be in such a position that if its supplies from outside are cut off it will be able to supply itself.

This is not a matter concerning raw materials which we are obliged to import, but of being at the mercy of a country, not friendly disposed, when we might make ourselves independent. You must look upon it as if it were one of those necessary munitions of peace which you must adequately manufacture yourselves. I have heard a large dealer say, "Oh, I'm a business man; I only look at things as a business proposition, and a difference of a tenth of a penny would make me buy everything from Germany, rather than from England." At that very moment tens of thousands of men were exposing their lives in the trenches to protect that man and his money. I wonder how many would have been there if it was always thought a brilliant thing for a man to look on everything from the point of view of a business proposition. If that is being done by the recruits, what are you and I going to do for our country? This is your part—you can protect your country by taking care that when peace comes it shall be under no subordination. A great writer has said, "There is nothing more desirable than to be wise at a great moment." This is a great moment. Be wise.

(A question was asked about patents, and Lord Moulton replied that this was not really a difficulty. A patentee must let his patent be worked in this country if he was not prepared to work it himself.)

A PRINTING PROCESS FOR WOOL GOODS

A process for printing woolen goods and other textile fabrics has recently been patented and has for its object the production of woolen fabrics bearing a permanent design. A woolen blanket can be printed with a permanent and durable design which is superior in appearance to a woven design, as a variety of coloring not attainable in a purely woven pattern can be obtained. The woolen fabric is prepared in the ordinary manner and is then subjected to a bath of sulphurous acid or sulphur dioxid gas which tends to bleach the fiber and prepare same for the subsequent process of printing. This fabric in its ordinary form before napping has a thickness of approximately one fourth of an inch and presents a felted roughened surface.

The cloth is then printed in the ordinary manner by block or spray printing, care being taken to use permanent colors which will not be discolored by the subsequent finishing process and which are not changed by the woolen fiber. In order that the design may be impressed upon the fabric throughout its thickness, it is required that the printing be applied with high and uniform pressure which would not be necessary were the printing on the surface merely. After the printing in one or more colors is completed, the cloth is finished by steaming which distributes and fixes the color uniformly throughout the thickness of the fiber. The

fabric is then napped so that a cloth approximately one fourth of an inch thick will attain double this thickness and have the soft appearance of the ordinary blanket. By printing the fabric before the napping operation, a softness of outline and a delicacy of tone is obtained which it is not possible by printing on the napped fabric. Emblems or crests of societies, clubs, hotels, etc., can be reproduced in their correct colors. Borders on blankets can also be printed in harmony with the decorations of the room in which they will be used.

THE WOOL GOODS MARKET.

New York, January 1, 1915.

During December the various lines of Mackinaw and Balmacaan fabrics have been placed on sale for the fall and winter season of 1915. Also coverts for men's wear, which have returned to favor, have been shown. Mackinaws have met with a large sale and will be a feature for outside coats. They have met with good success wherever the wholesale clothing trade is located.

The popular demand has been for goods ranging from $.85 to $1.00 per yard, on which fabrics the bulk of sales have been made. Some lines at $1.25 have sold freely, and at least one make at this price has sold to practically full production for the season. Finer goods up to $1.50 and higher have been sold to a considerable extent, to the higher class trade. One prominent line at $.57 1/2, which is largely constructed of cotton and shoddy, showing ability in manufacturing and coloring, has secured a large business.

The writer was allowed to inspect a popular line of free selling Mackinaws at $.32 1/2 net for three-quarter goods. They are cotton warp with printed patterns and present a very creditable appearance. Consumers who are not posted on fabrics would at first sight accept them as being all wool with woven patterns. Other makes of these goods are on the market as low as 26 1/2 cents for three-quarter goods. Prices on the better lines have been advanced one or more times, such advances range from five to fifteen cents per yard and were imperative on account of the growing scarcity and rising prices of stock suitable for making the various fabrics.

Goods suitable for making Balmacaan coats have been the second best sellers and have met with a good business, with some lines well distributed and orders still coming in. Coverts for men's wear have apparently returned to favor. A number of lines have sold freely. Present indications are that the season will develop an old-time demand for the goods.

A number of lines of low grade three-quarter goods were opened during the last half of the month. These fabrics have been placed on sale from two to four weeks earlier than usual. Reports on them are to the effect that some of the jobbers of clothing have placed their usual small sample orders, while other firms do not take any interest at present in placing orders on any lines. Several makers of three-quarter cotton warp solid colored overcoatings have met with considerable success at prices ranging from 25 to 30 cents.

With the exception of the above-mentioned sales the regular wholesale clothiers are not taking any interest in the new goods being offered. Some leading firms place orders for popular lines when they are offered and a few such makes have secured some business. Advances in prices, over a year ago on low grade goods, are said to be from 2 1/2 to 7 1/2 per cent., according to the amount of wool stock used.

The better grades of fancy woolen and worsted suitings will probably not be opened until late in January. There have been many more cancellations of spring fabrics during the month, also a demand from buyers to have their cancelled orders reinstated. On some lines a fair duplicate business has been recorded at advanced prices.

The new lines of dress goods and coatings will not be opened for some time. Spring dress goods have been very quiet with few orders coming in. Probably the best selling lines have been coverts for women's suits and coats. They were well distributed in sample lots during the first order season.

As the garments are selling, the buyers are placing orders to cover their sales.

The free sale of mackinaws, coverts and balmacaan fabrics is a great help to mills making carded wool fabrics and will place some of them above accepting contracts for any goods at litle or no profit.

As predicted by the writer in the wool goods report for a month ago, more contracts for army goods have been given out and among them are the largest contracts awarded. Large contracts for khaki cloth have been made and in at least two weights. These goods have been very successfully made in samples, and the goods are now being made after approval of the sample ends which were shown. A number of mills are at work on the lighter weight cloth and the goods are being delivered.

The heavy-weight cloth is being made in at least one mill. The color and fabric are very satisfactory. It is reported that difficulty has been encountered in securing mills to make goods at prices contracted for. A number of manufacturers have refused to make certain contract goods, either because of the low prices or the difficulty in securing the proper wool and shoddy required for their manufacture.

Contracts for uniforms and overcoats for the allies were closed during the month with two or three clothing firms. The garments are being made as fast as possible, as they are required within a short time.

All the piece goods and clothing are being made under the supervision of expert inspectors sent here by the governments contracting for them. It is imperative that the immense armies be well clothed, and it is reported that the required quantities of goods cannot be made abroad. This is the only country they can look to for their requirements.

The low prices in London for fine Australian wool is causing uneasiness among some of our manufacturers of fine goods. By their manufacturing this wool for export to this country they will be assured of the wool or goods not reaching their enemies. Their mills making fine goods are probably not well adapted to making goods for army purposes, consequently they may be free to make fine woolens and worsteds for this country, which is their only available market. Unless they allow us to import such wools the English manufacturers will have an advantage in regard to prices on all fine goods fabrics and will be the better able to undersell our domestic manufacturers.

The writer has information from British sources to the effect that they have low grade wools that are not suitable for army requirements, and that certain manufacturers there are making samples of low grade all-wool fabrics, from that stock, which they expect to sell freely here next season.

The reported lifting of the embargo by British authorities on merino wool, with a guarantee that none of it shall reach their enemies, has not resulted in an appreciable increase in its import. It is reported that it has been found to be impossible to give a guarantee that would be satisfactory to the government.

The working up an exporting of immense quantities of wool and shoddy needed for the clothing trade has caused much adverse comment and anxiety as to the outcome. Prices for clothing wools are soaring and are likely to go still higher. With our supplies of wool cut off there may be a serious shortage in the near future.

The importations of woolens and worsteds from British ports for November show over four times as many yards as for the same month last year. Fine woolen and worsted goods have continued to come in from England and a few from France. Strange as it may seem, a few cases of worsted goods have been received here from Germany within the last three or four weeks.

Chinese records state that in 2700 B. C. the Empress Se-ling-chi investigated the silk worm cocoon, reeled the silk filament from it, spun thread, and had it woven into garments. For many hundreds of years the Chinese carefully guarded their secret. At first only the royal family carried on the industry, but gradually it spread and became national.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

ENGLISH, BELGIAN AND GERMAN SHOE CLOTHS

By Our Regular English Correspondent

A number of samples of German and Austrian worsteds have been circulated to English mills by jobbers inquiring for similar goods. The offers are of interest to comparatively few. An average of 50 to 60 picks an inch is the trade preferred and business in goods ranging from 150 to 200 picks per inch is regarded as too disturbing to general arrangements. There are, however, English manufacturers without spinning or finishing departments of their own who specialize in fine corkscrews and the eleven shoe cloth samples described in detail in the Textile World Record for November have been placed before one such manufacturer. He describes them as easily the most interesting range of samples seen by him in the course of the war. The interest has more than one basis:

(a) He is a maker of the goods.

(b) The samples are not isolated ones, but a collection selected by a consumer.

(c) They are selected by a leather trader, not by a textile man, and are thus of use in showing what a consumer thinks.

The comments of "Southern Tier" upon the samples afford valuable light upon the subject from the shoemaker's angle, and, although an examination of the samples is indispensable to a thorough understanding of all that is implied, there are certain points that can be appreciated in the absence of bits of the cloth. Let us, for example, place together the samples No. 1 and No. 11 which the shoemaker regards as so nearly interchangeable that he will use the latter when he is short of the former. An analysis of the two, from the November issue follows:

No. 1

Warp, 174 ends per in. Dressed 2 face 2/62s worsted, 1 back single 22s worsted. Filling, 140 picks per in., single 32s worsted. Weight, 17.1 ozs. per yd., 56 in.

No. 11

Warp, 123 ends per in., 2/54s worsted. Filling, 152 picks per in., single 36s worsted. Weight, 14 ozs. per yd., 56 in.

The one is a double cloth, the other a single. There are three ounces a yard difference in the weight, and it is safe to affirm that no manufacturer would regard the one as an efficient substitute for the other and certain that any cloth jobber would indignantly return No. 11, were it delivered to him in place of No. 1. By ordinary standards the manufacturer and the jobber would be right; but in this case nobody's opinion is right except that of the shoe manufacturer. His verdict is accepted as final, but the disparity between his notions and current textile notions cannot pass without remark.

"Southern Tier," Nos. 6, 7, 8 and 9 are separate cloths, albeit all of one piece. They struck a manufacturer who handled them, without counting the threads or knowing the price or origin, as all being the same cloth. A more prolonged examination convinces the maker that they are all intended to be the same and exhibit only such differences as might be expected in goods delivered, possibly from different mills and at different dates. The three samples of Belgian origin Nos. 1, 2 and 3 differ from typical English goods in one fundamental respect. They are made from mule-spun yarn, whereas the British are made from yarn spun on cap frames. The advantages of mule yarn for any goods with a raised finish are recognized in Yorkshire and such yarn is bought from Continental and English sources to make pin-head weaves for dress suitings. A more spongy fabric is got than from yarns made on the Bradford system. Wool can be spun to a few counts higher on the mule than on the frame, so that a shorter and cheaper stock can be used in spinning. Mule yarn sells for less than frame yarn of similar quality and the same

count; the normal difference being two cents. The whole of this advantage is absorbed, in English experience, by the cost of sizing the warp and the greater difficulty in weaving. The balance of opinion is against mule-spun for two further reasons. In such weaves as corkscrews the rib is not so level and more trouble is experienced from defective pieces. The goods are liable to come up "flecky," and as solidity rather than sponginess is aimed at, frame yarn is preferred for such cloths as these.

"Southern Tier" calls the English cloths more harsh than the Belgian and the fact is not disputable if comparison is limited to English goods of an altogether lower grade and price. The material point to determine is whether frame-spun cloths of similar price are harsher than mule-spun. Harshness can only be detected by actual contact with the material, but it cannot be agreed that the accompanying countersamples sent to match Nos. 1, 2 and 3 are harsher. On the contrary the touch is finer. For such interest as they may possess I forward the samples detailed below. The prices in English are made f. o. b. Liverpool and the American equivalents are calculated on the basis of four shillings being equal to a dollar, with 40 per cent. added to cover freight and duty. The quotations are those of a firm that has been making similar goods for 25 years, buying yarns from the best spinners and sending their cloth to the best finishers. The shade of black is of course variable at will:

English Countersamples

To Match No. 1 at $2.50
Sample 586, 56-58 ins. wide, 16-17 ozs., 6/5 per yard ($2.25).

To Match No. 2 at $2.00
Sample 279, 56-58 ins., 16 oz., 5/8 per yard ($2.00).

To Match No. 3 at $1.37
Sample 1117, 56-58 ins., 16 oz., 4/6 per yard ($1.57).

To Match No. 4 at $1.54
Sample 975, 56-58 ins., 14 ozs., 4/3 per yard ($1.50).

To Match Nos. 6, 7, 8, 9 at $1.94
Sample 281, 56-58 ins., 14 oz., 5/6 per yard ($1.93).

To Match No. 10 at $2.20
Sample 470, 56-58 ins., 18 ozs., 7/0 per yard $2.40).

To Match No. 11 at $2.50
Sample 1525, 56-58 ins., 16 ozs., 5/10 per yard ($2.04).

Our analysis of the seven English samples of shoe cloth accompanying this report resulted as follows:

586
Warp, 180 threads per in. Dressed 2 face 2/56s worsted, 1 back 2/64s worsted Filling, 162 picks per in. single 44s worsted. Weight, 15.9 ozs. per yd., 57 in. wide.

279
Warp, 100 threads per in. 2/49s worsted. Filling, 164 picks per in. single 35s worsted. Weight, 14.2 ozs. per yd., 57 in. wide.

1117
Warp, 87 threads per in. 2/41s worsted. Filling, 130 picks per in. single 41s worsted. Weight, 12 ozs. per yd., 57 in. wide.

975
Warp, 93 threads per in. 2/41s worsted. Filling, 120 picks per in. single 33s worsted. Weight, 13.2 ozs. per yd., 57 in. wide.

281
Warp, 119 threads per in. 2/58s worsted. Filling, 149 picks per in. single 51s worsted. Weight, 11.4 ozs. per yd., 57 in. wide.

470
Warp, 171 threads per in. Dressed 2 face 2/54s worsted, 1 back 2/55s worsted. Filling, 143 picks per in. single 47s worsted. Weight, 15.2 ozs. per yd., 57 in. wide.

1525
Warp, 118 threads per in. 2/56s worsted. Filling, 162 picks per in. single 34s worsted. Weight, 14.5 ozs. per yd., 57 in. wide.

The sizes are for the yarn as it lies in the finished cloth without allowance for take-up in weaving or loss of weight in finishing.

SPINNING FINE YARN

BY WINTON

In spinning fine yarn it is necessary that the proper amount of twist be delivered to the spooler. The spooler itself is a very simple machine, but it must be carefully operated. Trouble is often caused by having the speed of the spindle too high, causing too much strain and breaking the yarn. The bobbin is first put into the cradle, the yarn to be wound onto the larger spool. This cradle should be properly set and should be tilted so the yarn will have the least amount of friction. If the cradle has too steep an incline, there will be too much strain on the yarn when it is drawn from the lower end of the bobbin; the opposite is the case when the cradle is set too flat. The cradle should be set so as to cause as light and as equal a

tension as possible. The two swinging wires which are attached to the upper portion of the bobbin holder or cradle one at each side, prevent the bobbin from being drawn out of the cradle while the yarn is being unwound, but they also add a little friction to the yarn.

When spooling weak yarn the end should pass between the swinging wires instead of under them, thus removing the friction. The important point is the strain on the yarn as the size of spool increases. This can easily be detected by watching the different ends that may run all right when the spool is empty. As it increases in diameter the yarn will break more or less. Let us assume that the spindles are running 800 revolutions per minute, which is a constant speed, and that the empty spool is 2 inches in diameter, the circumference being 3.28 inches. When the spindle makes one revolution 6.28 inches of yarn is wound. As the diameter increases more yarn is wound at one revolution until the diameter reaches 5 inches, when 15.8 inches of yarn is wound at one revolution of the spindle, which continues to make 800 revolutions per minute. This is a difference of 9.42 inches at one turn of the bobbin. The yarn may be strained too much at this point by having the speed of the spindles too high. A lower speed would result in less breakage and less knots, and the yarn would run better in the later processes. The fact that yarn runs good when the spools are empty is no reason for increasing the speed. The elasticity of the yarn may be destroyed, yet the strain may not be great enough to break the yarn.

The cotton fiber under a microscope appears as a collapsed twisted tube, like a corkscrew or spiral spring. When the fibers are spun into yarn these convolutions interlock, giving strength to the yarn. The strength varies according to the quality of cotton. Cotton that has the most convolutions is the strongest. If in any process the fibers are strained so that they do not come back to their original form, the strength of the yarn is destroyed to a great extent.

The yarn may be strained on the spooler and not break, but on the warper or slasher only a trifle more strain will break it. On the warper the yarn is run from the spools in the creel onto the large warp beam, which is a long pull on the yarn. The warp beam is driven by friction, by resting upon the driving drum. Owing to the beam being driven in this manner, the yarn is placed on it at a constant speed, no matter whether the beam is large or small. If the driving drum is 36 inches in circumference revolving at a constant speed, it will take just as long for the drum to turn the beam 36 inches whether it is empty or nearly full. If the beam is 3 yards in circumference when full, it will take three times as long to turn the full beam around once as it did to turn the empty beam when it was 1 yard in circumference. The yarn does not travel any faster when the size of the beam increases, but the spools in the creel travel faster as the yarn is unwound and the spools decrease in size, consequently, there is greater strain on the yarn as the quantity grows less on the spool.

The cone drive compensates for this by regulating the speed of the drum so that the tension on the yarn is uniform. There are some mills that still run the old warpers without the cone drive. By using the cone drive a larger production can be taken off the warpers by winding faster than usual throughout part of the process. The drum revolves faster at the beginning of a set and gradually decreases as the spools grow small. It is better on fine numbers not to run too fast. The quality of yarn more than pays for itself, as there are a less number of knots and poor warps.

It is better to have a gear drive for the slasher cylinder. This drives the machine at a constant speed, without gaining its motion from the pull of the yarn, as in some mills. Too much strain should not be applied at the tension roll. The larger the number of ends, the greater the tension required. The beam is driven by friction and the tender should use good judgment in the amount of friction applied. Too much friction strains the yarn and breaks the ends, while insufficient friction makes a soft beam which causes uneven cloth, the warp not weaving as well as when firmly made. The amount of friction to be applied is a trifle

more than is actually necessary to take up the yarn delivered from the tension roll. This tends to make a tight warp without undue strain on the yarn. Insufficient size makes soft warps which require careful handling by the weaver and which frequently cannot be woven. This also applies to a stiff warp or one that has too much size on it. A good slasher tender can so accustom his fingers to the feel of the yarn that he can readily tell the strength of the size. Yarn that has been properly handled is of greater value and weaves better because it yields somewhat to the strain put upon it.

ENGLISH NOTES

By Our Regular English Correspondent

It appears from the British monthly returns that the general exports of yarns and fabrics from the United Kingdom during November were a trifle more than half those of the corresponding month in 1913; being thirty-eight million dollars in place of seventy-two million dollars. In October the total was forty-three million dollars instead of seventy-eight and one-half million dollars and in September forty-five and one-half million dollars in lieu of seventy-one million dollars. The summary shows in brief the differences that the war is making to the accustomed course of the exports of textiles. For want of materials it is not possible to give a similarly concise statement of the sendings to America during the same months and tariff reasons incapacitate the figures of 1913. What can be seen from the available data is that shipments to America are much more highly maintained than those to the world at large. In comparing November shipments with those of the month preceding, it is found that there was a rather larger sending of cotton yarn, but 20 per cent. less yardage of cotton goods. No worsted yarn could be shipped in view of the embargo and there was a fall of half a million yards in the class of worsteds and stuffs. On the other hand there was a slightly larger export of carded woolens to the United States and in linen piece goods a fall of two million yards or twenty per cent. The downward movement is, however, very far from equalling the average and it will be seen from the following abstract how far 1914 is ahead of 1913 in the main articles of import into America:

Exports U. K. to U. S.
Eleven months to 30 November

		1913	1914
Cotton yarn	lbs.	4,957,000	5,459,400
Cotton piece goods	yds.	38,733,900	55,037,100
Worsted yarn	lbs.	58,600	1,965,400
Woolen tissues	yds.	1,812,300	7,916,700
Worsteds and stuffs	yds.	7,725,600	31,063,400
Carpets	sq. yds.	128,000	554,300
Spun silk yarn	lbs.	670,783	538,418
Silk broadstuffs, pure,	yds.	269,743	161,960
Silk broadstuffs, mixed	yds.	525,524	1,278,635
Jute yarn	lbs.	304,300	1,450,600
Jute piece goods	yds.	82,426,500	66,388,600
Linen yarn	lbs.	1,973,200	2,439,400
Linen piece goods	yds.	97,593,400	107,550,300

Much has no doubt been heard of the restrictions upon the export of wool from this country. There have, however, been impediments in the way of exporting wool goods and as certain changes in these affect the ability of British manufacturers to compete, it may be well to note the lines now open to export. Goods that can be shipped without application for a license are:

Black cloth. Fancy cloth showing a distinct pattern (other than underclothing). Wool cloth for outward wear under 18 or over 36 ozs. per yard, 56 ins. wide. Cotton warp or cotton weft wool cloth for outward wear under 20 ozs. for 56 ins. width.

Thus all dress goods, all black clays and corkscrews and most fancy woolens and worsteds are in the market. With more or less trouble licenses can be procured to permit shipment of:

Weaving yarns in counts unsuitable for military or naval use.
Hosiery yarns made of merino wool.
Hosiery for women and children's wear.
Cashmere socks and socks of under 26 oz. per dozen.
Pants and vests finer than 24-gauge.
Cardigans, sweaters, jerseys and gloves, clearly unsuitable for military use.
Mixed cotton and wool goods existing in stock.

The schedule is given as it stands, but there are other restrictions which may be reckoned upon in practice. Manufacturers weaving official khaki are out of the market, for as long as their contract obligations are in arrears they are prevented from carrying on other work. Again, the unofficial restriction of price makes itself effective. The de-

mands of the several armies have so raised the prices of coarse wools that manufacturers can get no ordinary business on cloths made from wools of 40s to 50s quality; or say from coarse to high-quarter blood. In this respect the carded woolen men are in hardly any better position than those in the worsted business. Prices of fine wools are coming down and work is wanted for the machines upon which they are manufactured.

* * *

In any event an important increase in the British production of dyestuffs is an assured outcome of the war. The existing plants are being doubled and liberty to work several patented colors under German license has been gained. If the Government scheme for the formation of a national synthetic dyewares company is completed the existing works will form a nucleus around which a much greater undertaking will grow. This scheme is the outcome of conferences with the leading consumers of dyes, and it proposes that common stock of $15,000,000 shall be subscribed by the consuming trade. The Government is ready in that case to guarantee for a period of 25 years the interest on $7,500,000 of bonds. The proposal has been received with general satisfaction, tempered with wonder whether the fifteen millions will or can be raised. The amount is large, the time is not particularly propitious and the outlay involves questions upon which the ordinary member of the trade has not full information. The proposition is being considered favorably with a full sense of the responsibility entailed, but the offer is not being jumped at.

Consumers are asked to commit themselves to a deep investment because their continued co-operation is indispensable to success. Unless they make the concern in the fullest sense their own, State assistance to it is unjustifiable. They are in effect invited to form a co-operative society for the manufacture of colors, in which the interest of the consumers is to be supreme. Its control will be absolutely in their hands except upon three points on which the Government nominees are to have a veto. The concern is to remain under British control permanently; no arrangement is to be made with any foreign producers either as to prices or spheres of action; large consumers are not to be given advantages over small consumers in price.

Suggestions that the case might have been better met by a tariff on imported colors have not come from dyers. Nothing tending to make dyestuffs dearer commends itself to them, dependent as they are upon the export of dyed goods. British color makers say, and many English dyers certainly believe, that hitherto they have had the use of German dyestuffs at lower rates than any dyers in Germany or other part of Europe. Cheap colors are what they want and from every point of view color-using is of more value than color-making; employing more persons and more capital. Color making is evidently profitable when carried on upon the German scale and in point of fact quite desirable profits have been earned by the English companies engaged in that line. Otherwise the trade is not especially healthful or enticing, nor very remunerative to workmen if one may believe current talk. The German chemical worker is said to do 70 hours a week for $5.76. The information comes from an English employer who grumbles that $6.48 for 54 hours is the least that his men will take and that they are agitating for a 48-hour week for the same money.

The war has pointed the danger of too exclusive dependence upon an outside source for supplies of a vital commodity, for making which England has already all the raw materials. There is no idea of endowing an industry for the benefit of those engaged in it, but simply of creating a new one for the advantage of those who use its products. The desirability of such a source has been suggested that the provision of capital should be shouldered as a common burden by those who are in any degree concerned in textile manufacture and distribution. From their point of view as well as that of the State it is, however, essential that the great users of dyestuff shall bind themselves to the national concern. As such an undertaking would certainly not confine itself to home supply, its prospects have their interest for America. Already grants have been

made for chemical research in connection with the scheme and the appearance in the field of a twenty-two and one-half million dollar company backed by the best scientific help that England can afford and managed by men trained in color making and using, should be a quite formidable event in trade affairs.

* * *

The improvement which set in a month ago in the cotton industry has scarcely been maintained and some spinning mills have reverted to short hours. Times have been bad, but the financial results in the twelve months ended November 30 are by no means of unparalleled badness. Of the 64 spinning mills brought into purview in F. W. Tattersall's circular exactly half of them made a profit. By a trifle, the profits of $372,000 outweighed the losses of $354,000 and represented a return of one per cent. on the share capital of the mills. Share capital represents two-thirds of the money used in the enterprises, the remainder being provided on loan. The same concerns showed 13 per cent. profit in 1913, and as their plants and machinery represent some $11,270,000 they form a not unimportant unit. One month before the declaration of war their affairs had become bad enough to necessitate curtailment of production.

As yet the benefits of war have not worked their way into published balance sheets. The Bleachers' Association, in the half year ended September 30, has a net profit of a little more than half that of either of the two corresponding half years preceding. The British Cotton & Wool Dyers up to the same date had had a deficit of $78,500 as against $57,000 profit in the same half of 1913. The Bleachers subsist upon the export of white cottons and the Cotton and Wool Dyers on the yarn dyeing of cotton and slubbing dyeing of wool. In the last-named capacity "Slubbers"—as they are best known—must have been strangely out of the running if they have not burst all records during October-December. Such quantities to a color, such frantic pressure for delivery has never been known since dyeing was invented as during the period August-December. William Fison & Co., mohair and worsted spinners and manufacturers, have no preference dividend because of the dislocation from the war, but for special reasons their concern is not representative. It is rather more indicative of worsted spinning affairs to note that Jonas Sharp & Son, Bradford, paid their usual interim 5 per cent.

Generalizations upon the fortunes of the industries are almost impossible to make. It is realized that some lines of business have gone, not merely for the duration of the war, but, in effect, for ever. There can be little hope of a recovery of the Turkish market, for instance, on which certain Lancashire districts have relied for the sale of heavy cottons. The people who wore Scotch tweed and Huddersfield worsted in Germany have been killed in large numbers and the preferences for English cloths in Germany and Austria may prove to have been killed also. The wounds in the German body economic must for long affect the old established trade in English cotton and worsted yarns. The losses may not be irredeemable, but the replacement will obviously take time.

Domestic trade in textiles other than articles of necessity probably suffers more from the absence of social gatherings than from any economic cause. Particularly in wool goods it has been hampered by the rise in prices of coarse and medium wools and by the impossibility of getting delivery from mills, filled with army orders. Of those who are executing official orders it can only be said that some are doing better than others in the mater of profit. Officers' khaki from good worsted merino is easy work, but the market is full. Woolen khaki is difficult to weave and to many concerns the business is only a stopgap, useful to reduce losses and hold the help together. It is to be assumed that to large carded woolen mills which have been reasonably fortunate in their purchases the business is something better, but, owing to the way in which orders have been placed, opportunities of anticipating the market have been few. Except for drills, towels, sheeting and the heavy fabrics made into soldiers' packs and belts, the cotton trade has not participated in army business to any notable extent.

THE MANUFACTURE OF ELASTIC FABRICS

BY SAMUEL BROWN

(Continued from September.)

The finishing of elastic fabrics call for much care. A great improvement is made by proper finishing, but it is also extremely easy to ruin the goods by improper handling in this process. Unlike other fabrics, the element of elasticity must be considered in connection with the sizing formula, and the process of its application. Finishing machines vary widely both in design and capacity, but the general principle is the same in all. A series of drying cans are arranged for the application of the sizing mixture. Fig. 91 shows a machine of the latest model, and built by the Textile Finishing Machinery Co., of Providence, R. I. It has a drying capacity of eight cylinders 24 inches wide and 36 inches in diameter, giving a contact of about 70 feet. These cylinders are arranged in two decks, so as to economize floor space. The goods first pass between a pair of independently driven high speed circular brushes, fixed at the feed end of the machine. This brushing clears the goods of lint before being steamed and sized. They next pass through two pairs of nip rolls, between which are fixed the steaming and sizing attachments.

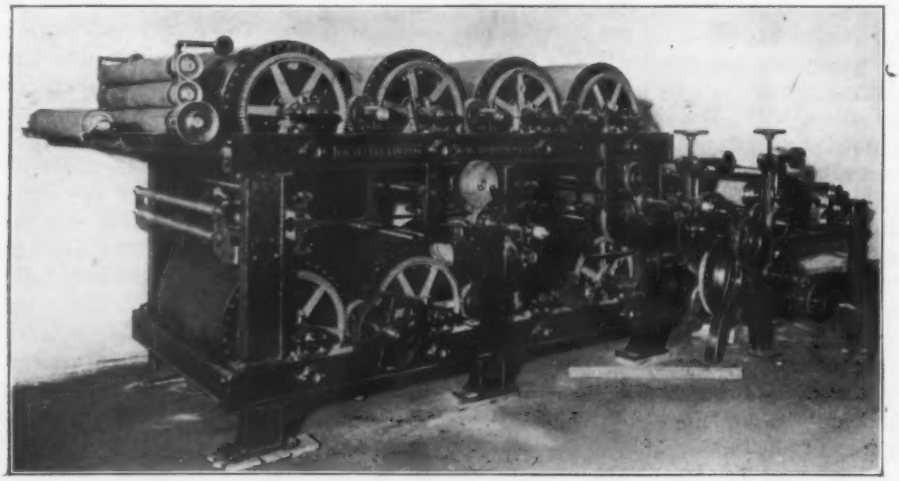

FIG. 91. DRYING CANS FOR ELASTIC FABRICS

The goods are passed through dry, high pressure steam, which is confined in a steam chest. The goods pass into the chest through slots underneath the cover. This cover has pitched sides like a roof, so as to allow the condensed steam which forms to run into a trough placed at the bottom of the cover. The trough carries the condensed steam away from the goods and prevents dripping; otherwise the goods would be spotted. The steam pressure must be carefully controlled so as to keep the shrinkage of the goods uniform. As soon as the cotton is softened by the action of the steam, the rubber threads which are under considerable tension, gradually creep up and contract the goods. The steam process makes the goods more absorbent and thus prepares them for the size bath, through which they are passed under submerged rollers. The size is used at a uniform temperature by steam heated copper coils. The goods next pass through the second pair of nip rolls which are worked under pressure so as to squeeze out as much size as possible before they go to the drying cans. The first of these cans should be kept covered with a cloth to absorb any wet size that remain on the goods.

As the goods continue to pass over the hot cans a gradual process of contraction takes place. This contraction is provided for by a

corresponding regulation of the speed of the cans. Intermediate expansion pulleys are provided for this purpose so that speed adjustments can readily be made to meet the requirements of different grades of goods.

The two pair of front rubber nip rolls are likewise independently driven so as to provide for the shrinkage which takes place at the steam box and size bath. At the delivery end the goods pass through a set of nip rolls which are belt driven from cone pulleys so as to deliver the goods at the speed they leave the last drying can. From these nip rolls the goods drop into the receiving cans or boxes. Ten to fifteen strips of goods running side by side are finished at one time.

The speed of the machine is governed by a Reeves regulator and ranges from 5 to 10 yards per strip per minute. An allowance of 3 inches to the yard is made for shrinkage in finishing. Neglect at any point in this process may so interfere with the calculated shrinkage that values will be materially changed. All new patterns and grades should be tested for shrinkage as soon as the goods come from the looms, as short lengths made in the sample looms are not always reliable. The immersing process is used chiefly for garter webs, lisle goods and single cloth webs. Double cloth webs, having a warp pile on the face are generally sized on the back only. An exception is found in white webs which are used for the corset trade. In this particular class of double cloth webs, a light bath size is often used, which may be tinted to the desired shade. The goods are immersed and in this way irregularity of shade is reduced to a minimum.

The requirements of the trade are so varied and the types of webs so numerous that no formula for size is suited for general use. Care must be taken to avoid sizes containing acids. Results from such preparations may seem excellent at the machine, but when the finished goods come in contact with metal parts in the making up, the metal is quickly tarnished and the result may be a heavy claim for damage.

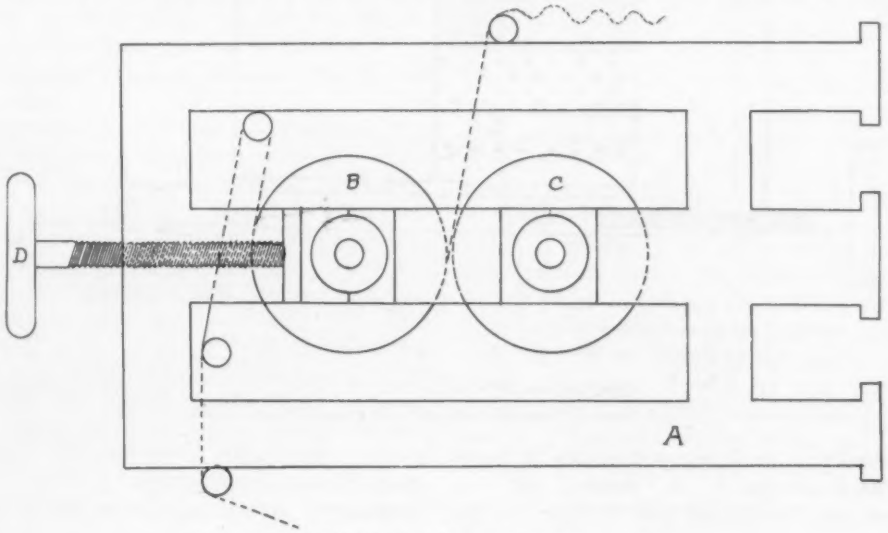

FIG. 92. A SECTIONAL VIEW OF THE EMBOSSING MACHINE

The embossing of elastic and non-elastic webs for suspender purposes has recently been introduced. It is a process of elaboration which affords large scope for variety of effects and is fast gaining in popularity. The process is similar to that used in embossing paper and leatheroid goods.

Fig. 92 is a section plain; and Fig. 93 an end view of the machine used for this purpose. It consists of a heavy frame, A, an

engraved case hardened steel roll, B, and a hard paper roller, C, into which the steel roll, B, meshes. The engraved steel roll, B, is heated by steam. These rolls may be

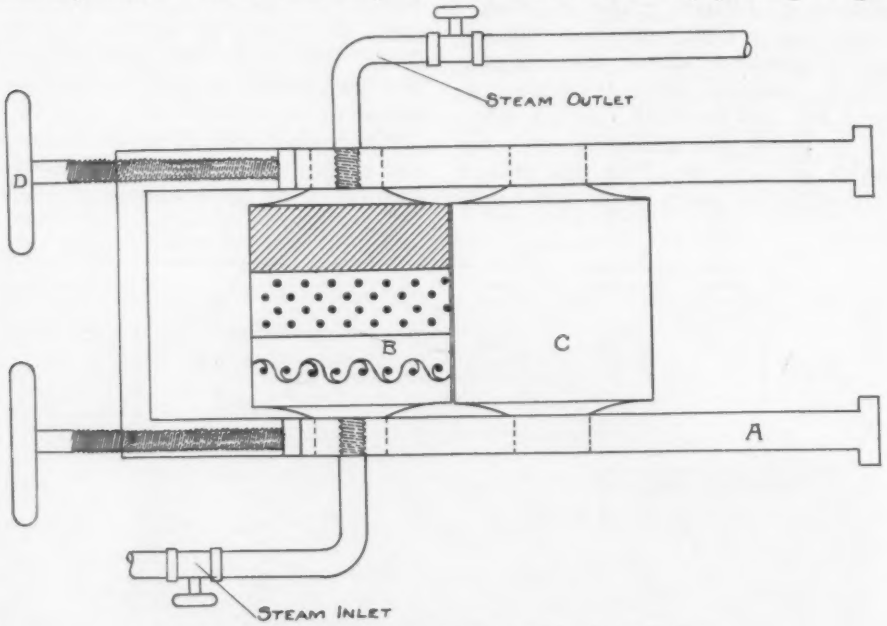

FIG. 93 AN END VIEW OF THE EMBOSSING MACHINE

subjected to a very heavy pressure by turning the hand wheels, D. Several different designs may be placed side by side on the engraved roller, B, as shown in Fig. 93, providing the lengths of the pattern fit the roll.

For rubber goods it is necessary to avoid the use of elongated figures which run for any distance in the web, because in the stretching of the goods during regular wear a figure of this character is liable to flatten out. Short and flat figures are preferable.

The most common form of embellishment for elastic webs is by printing. Figures of every conceivable kind may be used on plain grounds, and blended with woven colored warp stripes and other fancy effects.

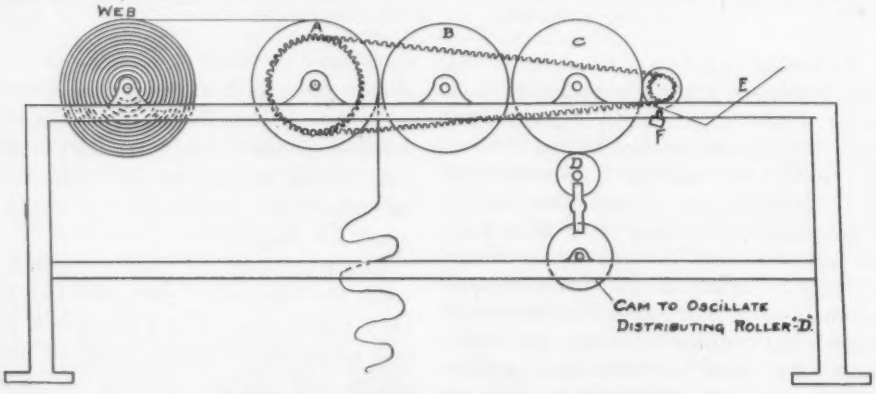

FIG. 94. A MACHINE FOR PRINTING ELASTIC FABRICS

The general character of any particular web may be entirely changed in this way.

There are two processes of printing in use. In one the designs are etched or engraved on copper rolls and aniline dyes are used to transfer the pattern from the rolls to the

goods. The objection to this method is the fugitive character of the printed patterns. The colors are liable to run when exposed to moisture. The most desirable method is that method by which the pattern is raised on the rollers and oil colors used to transfer the patterns to the goods. The colors are fast and cannot be moved even by boiling.

Fig. 94 shows the machine used for this purpose. The design roll, A, is 5 inches in diameter. The rubber-covered rolls, A and B, carry the ink along and all are positive driven. A small roller, D, which while revolving by friction contact with roller, C, is vibrated sideways so as to distribute the ink uniformly.

The design is first sketched on paper. A photo engraving on zinc is made the exact length of the circumference of the roller. This roller, which is 5 inches in diameter, is constructed of a number of thicknesses of maple wood, glued and screwed firmly together, with the grain well crossed so as to prevent shrinkage and warping. The zinc design is then carefully fitted around the roller and fastened to it. The entire chain of rollers are run on steel centers and can be adjusted so as to center any given pattern on to the goods. All the roller carriers are fitted in a tapered groove, which is planed to the full length of the frame bed, so that the pressure at the different rollers can be controlled. The machines are easily operated and speeded to print 12,000 to 15,000 yards per day.

One essential to success in manufacturing is a reliable system of cost finding. Elastic fabrics are so complex in their make-up and vary so widely in value that constant tests are necessary to ascertain whether expected conditions are being maintained. After definite weights are established for given grades, periodical tests should be made at the delivery end of the finishing machine to confirm such weights. It is here where the variable conditions of steam, the heat of the drums and the application of size are so liable to create changes in the shrinkage and value of the web, and which cannot be corrected should such tests be neglected.

The different counts and qualities of yarns which enter into most elastic fabrics, and particularly the double cloth webs, make it necessary to separate each of the component parts into a given length or weight of web so as to arrive at the cost. The old system used to be to find the weight and value of the warp before weaving, and then after the goods were woven to figure out the number of yards of web produced from a given weight of warp. Although it may be accurate it is too slow and costs must now be determined quickly and accurately. Various systems have been introduced in different establishments to determine the cost of a given length or weight of web. One of these methods consists of the following operations: One yard of web is weighed and the number of yards per pound calculated. Any convenient quantity of the web, say 200 grains, is dissected, each component part being weighed separately so as to determine the proportion of each. The average cost of the web is then calculated from these proportions and the cost of each kind of material and the cost of a yard of the web is calculated. The cost of weaving and overhead charges are then added to determine the mill cost of a yard of webbing. This method is illustrated by the following example:

1 yard web weighs 218.8 grains
7,000 (grains) ÷ 218.8 (grains) = 32 yds. per lb.

A sample of web weighing 30 grains is composed of the following materials:

9 grains 2/60s yarn	30%
12 grains 2/50s yarn	40
1.8 grains 2/40s yarn	6
7.2 grains Rubber	24
	100%

The average cost per pound is found as follows:

30 lbs. 2/60s at $ .70	$21.00
40 lbs. 2/50s at .48	19.20
6 lbs. 2/40s at .40	2.40
24 lbs. Rubber 1.75	42.00
	$84.60
Cost per pound	$ .846
.846 ÷ 32 (yds. per lb.)	.0264
Weaving	.0975
	.0339
Overhead expense 15%	.0051
Cost per yard	.039

THE MAKING OF SCOTCH TWEEDS

By THOMAS WELSH, Hawick, Scotland

From Journal of the Huddersfield Textile Society

A definition of Scotch tweed, when Patterson and my father plied their trade in 1845, would have been easier than it is to-day. I suppose we all know the story of the careful housewife making enquiry regarding the quality of some woolen fabric she wished to purchase. Looking at the merchant, holding the goods in her hand, with great economy of words, she asked, "Oo?" "Aye, 'oo," was the equally laconic reply. Not quite satisfied, she asked "A' 'oo'?" receiving in reply the assurance "Aye! a' 'oo'.' Still inquisitive the housewife again asked "A ae oo'?" "Aye! a' ae 'oo' " replied the salesman. After which I hope he made a sale.

To-day Scotch tweeds are still made of "A' 'oo'." They are made in an immense variety of cloths and designs, and in an almost infinite number of colors. Every process of manufacture has been revolutionized since the early days of the trade, but the material put into them remains the same in this respect at least, that it is pure good wool. The salesman of Scotch tweed can still assure his customer that it is "A' 'oo'," and that is the furthest anyone has yet got in a definition.

The Sotch tweed trade grew out of a small woolen trade that had existed for many years in most of the border towns. The productions of the looms were plain colors, drabs, browns, blues, blacks, and greys, except that a small business was done in black and white checks for shepherds and their families. The fancy trade got a start from the circumstance that between eighty and ninety years ago an unknown man made a pair of trousers from one of these checks, and immediately checked trousers became fashionable. At first they were all made in black and white in various sizes of square checks, until by a lucky accident a black and brown check was made. This was soon followed by black and blue and black and green checks woven in black and white and dyed in the piece. Then broken effects were designed. Perhaps about this time the well-known Glenurquhart was first made. Another circumstance did much to help the trade. A London Scot named Binnie had a pair of black and white check trousers, the fashion having changed from tight to loose trousers he did not wish to lose a pair of good checks, nor did he like to be out of the fashion. So with that regard for economy that is supposed to characterise his race he opened the outside seams and inserted a strip of black cloth about two inches wide, making a border down the outside of the leg. The innovation caught on, and gave a great impulse to the trade. Borders continued to be made down to about 1876 and, often gave the weavers much trouble.

Tweeds are not now "a' ae 'oo'." They were first made from local wool, a species of cheviot of good spinning quality, but now much foreign wool is used. Perhaps the very first foreign wool was made into a shepherd check costume cloth at the request of a lady. The wool was German lamb and cost 4/- (96 cents) per lb.. Needless to add there was not a large sale for that material. The number of qualities now used is only limited by the varieties of good wool obtainable. There are two great classes of wool—Cheviot and Saxony. The former is the quality with which the trade began and it is still used in great quantity. It is produced locally in several varieties. Nowhere in the world are there more sheep to the acre than in Roxburghshire and Selkirkshire. There are over 1,000,000 sheep in the Border counties, and half of them are pure Cheviot. The others are crosses of Cheviot with Leicester, Southdown, and other breeds—all having the Cheviot character. The very best Cheviot wool is grown in Sutherlandshire. Wool with the Cheviot crispness of handle comes in large quantity and much variety from New Zealand, the product of sheep raised for the frozen mutton trade—some also from the Falkland Islands and from Punta Arenas. Saxony wools come mostly from Australia, a little from South Africa, and make a smoother softer handling cloth than the Cheviot.

Manufacturing is being divided into four departments. At one time every maker bought his wool in the fleece and sorted it

into qualities on his own premises, dyed the colors he wanted, and then made the yarn and cloth. The modern tendency is to subdivide, making wool-sorting one branch, dyeing another, carding and spinning another, and weaving and finishing the fourth. There are still a few old firms who do all four, but their numbers are decreasing. Most of those who spin and weave buy the wool ready sorted. Many weave only; some spin only.

The first care is to clean the wool in such a way as to preserve all its felting properties. Fine wool felts easily when it is wet, and unless great care is taken it may felt in washing, whereby its value will be greatly reduced. The best method seems to be that in which the wool is cleansed in a machine having three washing bowls in which the material is carried through the bowls and forward from one bowl to the other by the flow of water. The scouring solution composed of neutral potash soaps is graduated in strength, stronger in the first bowl than in the second, and in the second than in the third. A raking apparatus, in form like a harrow, the full width of the bowl is dropped vertically into the bowl to immerse the wool thoroughly and assist the water to carry the material along. The wool is not allowed to travel on a lattice board when wet, but is carried forward to the nip of a pair of rollers where the liquor of one bowl is squeezed out and the material passed into the next one. At the end of the third bowl, after passing through a pair of squeezing rollers the wool is carried on a lattice board into an air-drying machine by which it is delivered quite clean, dry, and unfelted.

The same care is taken in the still more difficult process of dyeing. In scouring the water must not be too hot, but in dyeing a considerable degree of heat is imperative, and that increases the difficulty of the dyer very much. To make the wool a good fast color without injuring its felting properties or reducing the strength of the fibers is the aim of the dyer. He attains this by disturbing the wool as little as possible when it is being dyed. Instead of moving the wool in the dyeing liquor as they did in the old days, the liquor is moved through the wool. The material is put into a dye pot having a double bottom, the upper one of which is perforated. A perforated cover is put over the wool and the liquor made to flow through the perforated cover downwards and through the perforated bottom upwards, changing its direction at short intervals until the wool is the proper shade. It is then dried with hot air.

When all these operations are carefully performed, the wool is handed over to the carder in good condition for his engines. Batches are seldom made up for the carder "a' ae 'oo' "—most often they are mixtures of two or more qualities combined to get a special effect, or it may be a special price. For mixtures it is always desirable to have a better quality for the prominent color than for the ground. In a Cheviot mixture for example, the dark color may be made of New Zealand crossbred, and the light or fancy color of pure Cheviot or Cheviot lamb. In some cases the ground may be a good Cheviot and the fancy color Saxony. In Saxony mixture a cheaper quality can be used for the dark part of the mixture and a dearer quality for the light, or fleece wool for dark and lamb of the same sort for light. To get special effects, and it may be to get special prices, as many as half-a-dozen qualities may be put into one blending.

Designing begins with the mixing of the wool. Color combinations in mixtures receive great attention. For not only must each mixture be good in itself, and different from all others, but the several mixtures of each series must be related to each other in such a way that together they make a range of various depths of the same combination of colors. Color is the most important feature of Scotch tweed. It is the selling point. The cloth must wear well, but its wearing qualities will never be put to the test unless it is well colored. The first thing a prospective buyer sees is the color; if that does not attract him, he passes it over, and so the most careful attention is given to the production of good and new colors. Every season some new colors in mixtures and solids for grounds are introduced. Fresh twists

and other new colors for stripes and over checks are secured. While many colors run from year to year and are never really out, others arise, have a longer or shorter run according as they are in good or bad taste, and then disappear. Whether the taste is good or bad, the fashion must be met, and many anxious days are spent getting the right thing.

When the colors are decided on, ranges are made. They are produced in various ways. Generally they are now made in one color, sometimes in one depth, sometimes in gradation. When made in one depth they are made in a variety of designs or in various sizes of one design. When variety of design is aimed at, the ground is all one color in say five divisions. All the divisions are the same design, the stripe or over-check being different color in each. One weft is woven the colored check being fringed in, so that each of the divisions is perfect. Then the size of the check is altered and another weft woven, and so on until there are five different designs with five colors in each. Various sizes of the same design are made by having each of the divisions a different size. Say a shepherd check—made 4 × 4 and 6 × 6 and 8 × 8 and 12 × 12 and 16 × 16. If made in gradation the range is all the same design but each tone is different.

The size of the ranges is governed by the circumstances of the factory. If it is large with several agents at different places, the ranges may be made large size, each color the ordinary width, but the wefts extra long, so that when finished they can be cut into two or three lengths, and mounted into two or three sets for the different travelers. Each agent at the same time has a number of ranges sent uncut and unmounted in exclusive designs. A small duplicate of each pattern of the mounted ranges is numbered and kept at home so that orders may be given by number only. In the event of a merchant wishing to confine a style, the remainder of the range is withdrawn from the other traveler's sets. In some cases ranges are made to show to one house and are not exhibited elsewhere until that customer has seen and rejected them. There are merchants who confine a cloth and if they reject any range in that cloth it is not shown elsewhere.

Range and sample making is a very expensive item in manufacturing—something like 15 ranges and 100 yards of samples are made annually at a cost of £15 ($75) for each power loom in a mill. They are mostly woven in narrow power looms. Each mill keeps a special staff of workers for the purpose. The setting of Scotch tweeds follows very much the old lines, although designers are now conversant with Ashenhurst's rules, and employ them when necessary. As a matter of actual experience the great majority of new cloths are made with reference to some previous make, and are set accordingly.

(To be continued)

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

This Series began in July, 1911

(Translated and Revised by Samuel S. Dale.)

When the warp and filling are set 2 face 1 back or 2 back and 1 face and each texture is brought alternately to back and face without changing the weave, the method shown at Figs. 1678, 1680 and 1681 is adopted. The motif is shown at Fig. 1679. At Fig. 1678 both face and back are woven plain. Fig. 1680 shows a basket and a plain weave. Fig. 1681 is a complete draft in which one texture is plain, the other a 2 up 1 down twill.

These fabrics are usually set 1 fine, 1 coarse, 1 fine thread, or 1 worsted, 1 mohair, 1 worsted. If the set is 1 face 1 back the weaves are arranged as shown at Figs. 1639 and 1640.

There are transposed weaves in which each fabric is not woven with the same weave throughout, but where the weave is changed when the fabric is carried to the opposite side of the cloth. Each fabric appears alternately on back and face, but shows in each case a different weave. No fixed rule can be laid down for drafting such weaves, the aim being to bring the transposition of

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the fabrics and the different weaves in the required order. The operation of drafting is facilitated by coloring the draft to indicate each weave.

There are cloths, however, which are half-transposed fabrics, in which the threads of one texture change places, as it were, with the threads of the other texture. By

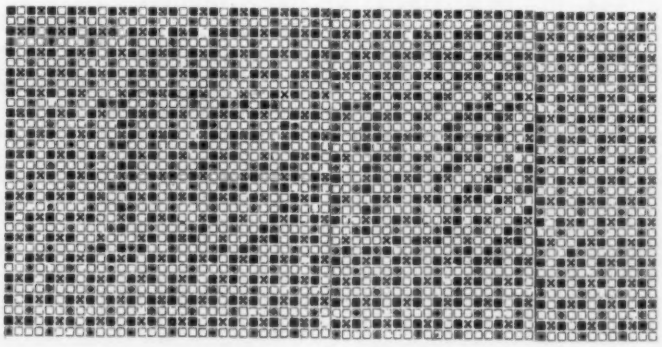

FIG. 1677

An example of the last named construction is seen at Fig. 1682, which is a 48-

this arrangement it is possible to obtain three shades. For example, we may have

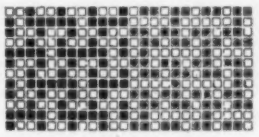

FIG. 1678

FIG. 1679

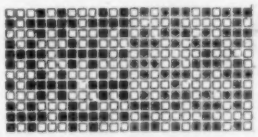

FIG. 1680

thread diagonal, of which 24 threads belong to each texture. One texture is woven with a 6 up 6 down twill on the face and a 2 up 2 down twill on the back, both running in the same direction, to the right as the face of the cloth is held before the observer. The other texture is woven with a plain weave on the face and with a 2 up 2 down twill to the left on the back. On the face a plain weave alternates with a 6 up 6 down twill. On the back a 2 up 2 down twill to the right alternates with a 2 up 2 down twill to the left. Fig. 1683 represents the face and Fig. 1684 the back of this fabric.

Each of the transposed double textures thus far shown is composed of two fabrics, each of which preserves its identity while passing alternately to the back and the face of the fabric. Each thread in the cloth belongs to one of the two textures and does not pass to the other. This arrangement permits of but two shades to appear on either side of the cloth.

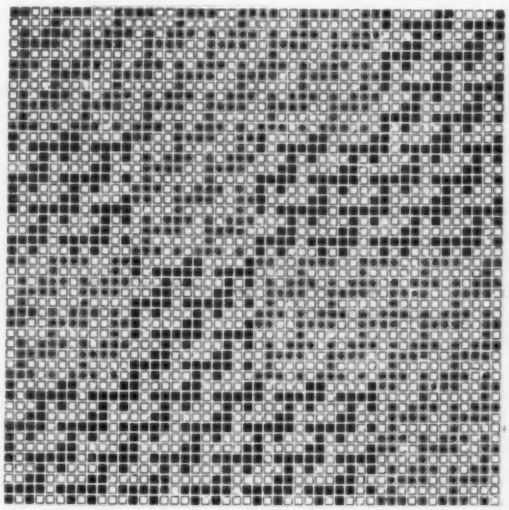

FIG. 1681

one shade made by the crossing of black warp and filling, a second shade by crossing

white warp and filling, while a third shade is a gray made by carrying the white warp across the black filling or black warp across the white filling. A tiger skin pattern can be made in this way, the ground being a

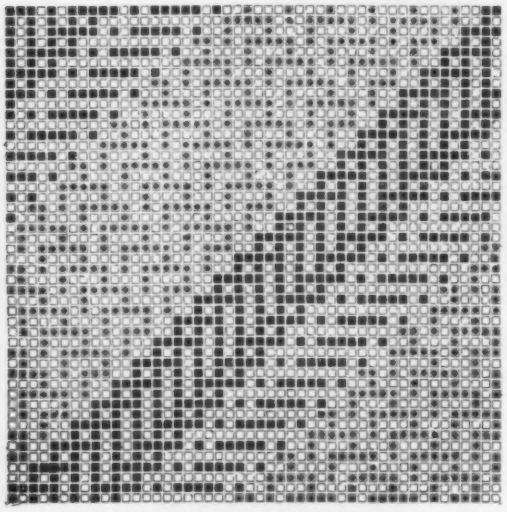

FIG. 1682

mixed shade, while the spots are made with the clear colors.

An illustration of a half-transposed weave woven plain is found at Fig. 1686. The ground is a mixed shade, while the stair

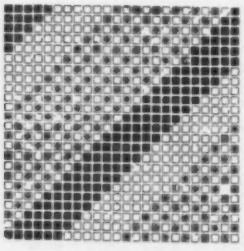

FIG. 1683

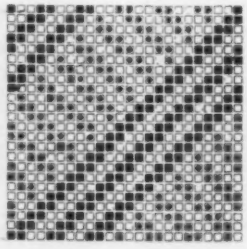

FIG. 1684

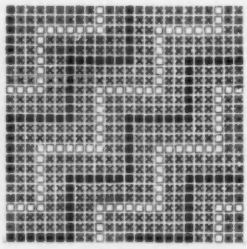

FIG. 1685

lines alternate with a light and a dark shade. The motif is seen at Fig. 1685, each line of which corresponds to four threads in the complete draft.

Calculating the Number of Heddles

When the warp is drawn in straight, the shafts each carry an equal number of heddles. For example, if 2400 threads are drawn straight on 8 shafts, each shaft will carry 300 heddles. With many drawing-in drafts, however, it is necessary to vary the number of heddles on each shaft to correspond with the draft. The method of calculation is as follows:

(1) Divide the total number of ends in the warp by the ends in a pattern to find the number of patterns in the full width.

(2) Multiply the number of patterns in the warp by the number of threads drawn on each harness in one pattern. This method of calculation is illustrated by the following example based on the drawing-in draft shown at Fig. 1687. There are 50 threads in the pattern and 4,000 threads in the warp, making 80 patterns in the full width:

Shaft	1, 80 × 2	160 heddles
Shaft	2, 80 × 4	320 heddles
Shaft	3, 80 × 4	320 heddles
Shaft	4, 80 × 2	160 heddles
Shaft	5, 80 × 2	160 heddles
Shaft	6, 80 × 8	640 heddles
Shaft	7, 80 × 7	560 heddles
Shaft	8, 80 × 7	560 heddles
Shaft	9, 80 × 7	560 heddles
Shaft	10, 80 × 7	560 heddles
	80 × 50	4,000 heddles

The Pattern and the Position of the Color

Cloth patterns may be divided into three classes:

1. Color Patterns. A smooth, uniform weave with the pattern produced by an arrangement of contrasting colors in either warp or filling, or both.

2. Weave Patterns. Warp and filling of a single color, the pattern being produced by the weave only.

3. Weave and Color Patterns. These are obtained by combining weave and color patterns in the same cloth.

Varied and interesting effects are obtained by combinations of weaves and color patterns. Such combinations often change the

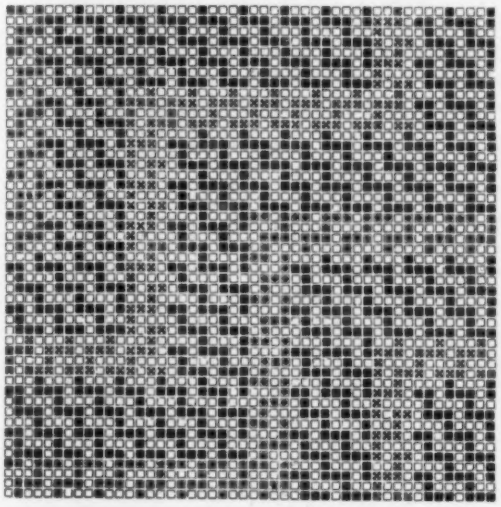

FIG. 1686

appearance of the cloth completely so that the resulting pattern does not resemble in the slightest degree either the weave or the color pattern in question.

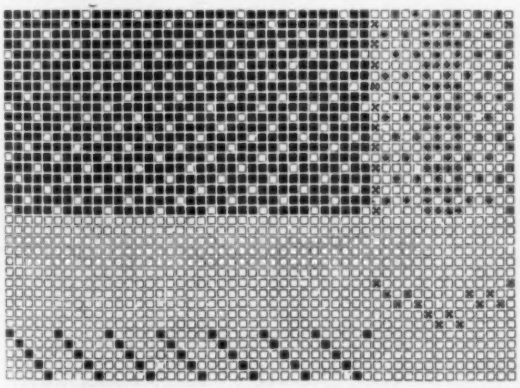

FIG. 1687

In sketching color effects the weave is painted with red as usual, then all warp risers are colored black on the threads of one color contrasting with the ground. If the warp is dressed 1 dark 1 light, the risers in one row will be colored red, those in the next row black. The filling colors are next indicated by painting the black squares (sinkers) on the black picks with red, the blank squares on the light colored picks with black. The black color now indicates the light color of both warp and filling.

GERMAN PRODUCTS TO SUIT GERMAN TASTE

By W. TAUBER, of Tauber & Hellmann, Glauchau, Saxony

The present political situation should give impetus to the effort to free German styles from dependence on Paris and London. The habit of purchasing novelties from France and England at high prices should be exposed and men should be found on German soil to supply the collections of samples for our own country. Having imparted a German complexion to the Brussels exposition it remains now for us as conquerors to reap the benefit. It should be the settled purpose in all branches of industry to rid ourselves of the old tradition that collections of samples must be obtained from abroad. Irrespective of whether the new styles heretofore received regularly from Paris and London originated with high-born ladies or with the demi-monde, one thing should be settled, namely, that every Paris novelty must conform to solid German taste with all extravagance discarded. The result will be German taste and German character, in other words our own styles. Our settled purpose should be to free our industries from foreign influence without running the danger of making our own products monotonous. The fact that the foreign collections of samples have ordinarily been made of German materials shows how unnecessary has been our dependence on foreign countries. Every land should carry its products under its own flag. Above all things we should prevent our textile novelties from finding their way to Paris or London and then distributed as Paris and London products. During the fervor which now animates our country from East to West and from North to South, our motto should be "German Taste and German Products."—Wochenberichte Leipziger Monatschrift fuer Textil-Industrie.

FIBERS NOT GENERALLY KNOWN

BY ROBERT DANTZER

Translated from the French by the Editor of the Textile World Record

An examination of a list of textile fibers will disclose to spinners and weavers many materials that are but little used and about which but little is known. Under certain conditions it is evident that these fibers are susceptible of many uses. Unfortunately those most interested lack precise knowledge regarding them. Among such fibers is the wild nettle, found along the roads and hedges. The leaves are of a dull green shade, have a saw-tooth edge and are covered with stinging hairs. The stems yield a filasse which is easily worked. The best specimens of textile nettles are found in the tropics and include the urtica capitata, growing to the height of 3 to 5 feet, and the urtica chamaedryoides, which is from 6 to 30 inches in height and plentiful in the United States.

The use of the nettle as a textile fiber dates from very early times. The Egyptians and the ancient Scandinavians used it. The account of the third voyage to the coast of Kamchatka states that the natives used the nettle fiber to make rope, twine and sewing thread. The ancient records note the use of the nettle in Germany and Russia. It was also known in Italy and France during the middle ages. The Encyclopedia of the 18th century contains an article on the production and use of the nettle, which states that it is manufactured into yarn in Germany. About the same period experiments with the nettle were carried on in Angers and Mons with very satisfactory results. At the beginning of the 19th century there was a permanent trade in nettle goods carried on in Picardy, Germany and Sweden.

During the past century there have been numerous attempts to cultivate and use the nettle, including Bartoloni in Tuscany, 1809; by Edward Smith in England, 1810; and by Withlow in the United States, 1814. Among those who engaged in this work it is necessary to include a number of Frenchmen, the abbe Rozier, 1793; Chalumeau, 1803; Chaumeton, 1818; Lardier, 1820; Chatin, 1861; Eloffe, 1869; Barot, 1891; d'Astanieres. 1894; Michotte, 1895. The abbe Provenchir, 1862, reported that the nettle was used in Canada in the manufacture of cloth and cordage. At the Paris Exposition in 1878 Japan exhibited a large collection of nettle fibers, yarn and fabrics. Experiments in nettle culture have been made for some years on plantations in Russia and a company with a capital of $1,000,000 was organized in Moscow. It has built a mill for decorticating, spinning, weaving and dyeing the material. There is also a nettle spinning mill at Neumunster, Schleswig-Holstein. A company has established a mill at Karlsruhe, Baden-Baden, and has endeavored to form branches in France and Belgium, but without much success.

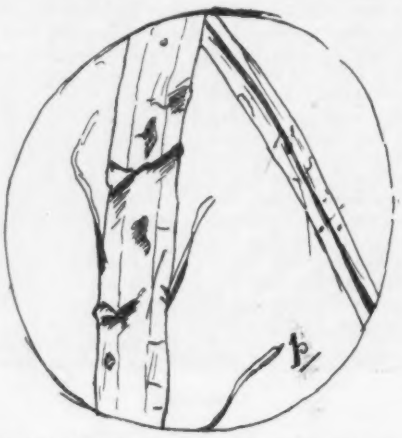

FIG. 1. A NETTLE FILAMENT AS SEEN UNDER THE MICROSCOPE

The appearance of the nettle fiber varies with the method of extraction. After decorticating the bark in the green state, the fibers are in the form of a greenish ribbon, harsh to the touch, about 60 inches long and containing more or less woody matter according to the thoroughness of the decortication. These filaments rapidly assume a reddish gray shade and in that condition it is difficult to distinguish them from ramie or green hemp. The combed fibers are in the form of regular filaments from 1 to 1 1/4 yards in length and free from woody matter. The green shade is more uniform and the fiber is flexible and soft to the touch, es-

pecially if the combs have been oiled. The material when degummed in the raw state is a yellowish white. When degummed and bleached, but not combed, it has the appearance of flax. The combed stock has an appearance similar to that of degummed ramie.

The retted flax varies widely according to the method of retting that has been used. Retting in running water produces ribbons of soft fibers, lustrous and the color of straw. When retted in standing water the color is a dirty gray, as is the case when the stock is retted in the fields. Certain precautions are necessary in working fresh nettle. The stinging nettle, growing 14 to 20 inches high, is more irritant than the dioecious nettle, which grows to the height of 40 to 70 inches.

According to Dr. Grothe, 100 pounds of green bark yields 46 pounds after drying, producing 32 pounds of filasse, which in turn yields 20 pounds of combed filasse. The extraction of the fiber by decortication is preferable to retting and the apparatus used for working ramie serves perfectly for the nettle fiber. The decortication should immediately follow cutting. It is difficult to decorticate the material if the fibers have been cut more than eight hours previously; at the end of twenty-four hours decortication becomes impossible. The strips of fiber obtained by decortication are dried or retted according to the process selected. The material is generally dried in the open air and the fibers are separated by degumming by chemical means or by retting.

The chemical process is similar to that used for ramie, the material being immersed in a solution of soap and hypochlorite of ammonia. The retting process is similar to that employed for flax, hemp and similar materials. The nettle fiber is soft and flexible, the length varying from 1/8 to 2 inches. It is in many respects like the ramie fiber.

Fig. 1 shows a nettle filament as seen under the microscope. As it is composed of pure cellulose, nettle exhibits the same reactions as ramie:

Iodine and sulphuric acid (Bell solution), a bright blue.
Iodized solution of chloride of zinc, bluish violet.
Iodized chloride of lime, rose.

The "Societe Karlsruhe," which has attempted several times to establish branches in France, claim that the nettle fiber possesses great strength and a permanent silk luster. The affinity for dyestuff is similar to that of cotton. The nettle fiber can be used alone or mixed with wool. The nettle fiber is worked on the ordinary worsted machinery and has been spun to 60s (cotton count).

The carding process requires much care. The "Societe Karlsruhe" quotes the following prices for different forms of nettle:

Raw stock	lb.	$ .12
Carding, combing and spinning		.05
Incidentals		.02
Yarn		.19

The "Societe" quotes the following prices per 100 pounds for the raw stock:

Raw material	$6.60
Preparation	1.54
Total	8.14

MOISTURE IN COTTON

The following interesting correspondence between H. H. Blunt, of the Wonolancet Co. and Theodore H. Price, of New York, was published recently in "Commerce and Finance":

Nashua, N. H., Nov. 10, 1914.

Mr. Theodore Price, 24 South William St., New York City.

My dear Mr. Price: I enclose a clipping from the North China Daily News, of September 25, in relation to watered cotton, which may be interesting to some of your readers. You will recall that both Shanghai and Tientsin have Anti-Adulteration Societies, and this clipping is in regard to the amount of moisture permitted to pass customs barriers before arrival at the Chinese port.

Very cordially yours,
H. H. Blunt, Treasurer.

FROM THE NORTH CHINA DAILY NEWS

Rather an unfortunate development has taken place in connection with the enforcement of the new Regulation adopted by the Cotton Anti-Adulteration Association of reducing the percentage of moisture in the cotton brought for the mills. At a meeting of the Association held in May last, it was unanimously agreed to reduce the percentage of acceptable moisture from 12/15 per cent. to 11/14 per cent.; it was also arranged that the rule should come into force in September. The Chinese cotton dealers naturally opposed the rule, although the reduction of the percentage of moisture was bound to prove beneficial to them in the end. Owing to some technical fault, it was found that the regulation could not be enforced with regard

to cotton intended for export. Hence, the Association modified the resolution to the effect that, while the old percentage of moisture would be accepted for export cotton, the local mills, who are members of the Association, would only accept a moisture of 11/14 per cent. The Chinese dealers have been complaining, and in their efforts to defeat the purpose of the Association they had the support of the Chinese-owned mills, which have all along kept away from the Association. The mills that are members have been holding fast to their rule, which came into force on September 1. During the past two or three days the cotton dealers have begun to boycott the mills and sell no cotton to them. At a time like the present when the mills have to depend on new cotton, and the general financial situation is none too good it is serious for the mills. It is only right to state that the proposal of the mills is quite fair to all parties concerned, and the Association deserves the support of the Government, which has all along recognized the good work done by the Cotton Testing House.

New York, Nov. 11, 1914.

Harry H. Blunt, Esq.

My dear Mr. Blunt: Thank you for yours of the 10th. I have given the clipping to Mr. Spillane and asked him to use it in my paper. I am not, however, entirely in sympathy with this talk about watered cotton. The mills kick about the cotton being damp when they get it; they put it through their pickers and carders and then through humidifiers they reintroduce into the cotton about twice as much water as was in it when it was taken out of the bale. This is the other side of the question.

Yours very sincerely,

Theo. H. Price.

Nashua, N. H., Nov. 12, 1914.

Theodore H. Price, Esq., 24 South William St., New York City.

My dear Mr. Price: You recall that Pudd'nhead Wilson said that a certain number of fleas were good for a dog, for they kept him from thinking about being a dog. In the same way, a certain amount of moisture is good for cotton. As you know, experiment has shown that cotton will take approximately 8 per cent. moisture. In excess of that it rots the fiber. A deficiency causes brittle cotton and all its cussedness.

The difficulty in China has been excessive moisture. Cotton is bought in the interior and packed in the interior in bags and shipped by river, usually, to the ports. If the Chinamen can possibly manage it, he turns a hose inside the bale, or casually drops three or four buckets of water inside the bag. So the cotton, compressed under hydraulic pressure as it is, in a bale weighing quite as much, but one-half as large as the American bale, comes through to America, and the unsuspecting purchaser finds that instead of approximately dry cotton, there is a cake as hard as a rock, where the excessive watering has taken place.

In 1910 we opened here for account of one of our Boston friends 15,000 lbs. of China cotton which had been excessively watered. To be sure we hadn't the efficient machinery we have now for opening China cotton, but I doubt if our present machinery would have done it. We had to use a crowbar and sledge hammers to open it, and one man could only break up a bale a day. This is why your lack of sympathy with watered cotton does not meet with my approval and you can see why.

To stop all this fraud on the part of the Chinese trader, Anti-adulteration Societies were started at Tientsin and Shanghai, and with the cooperation of the Government, an agreement was reached whereby cotton containing, by actual test in the Anti-adulteration Society's test ovens, 12 per cent. of moisture, was allowed to pass as up to grade. If the cotton contained 3 per cent. more, it was allowed to pass with indication on the invoice that it contained 3 per cent. excess moisture. With this explanation, the clipping that you have will, I know, have your further approval.

So far as humidifiers are concerned, in a cotton mill you must know that our atmosphere is very dry compared with the ideal atmosphere of England, in their Lancashire section, and American cotton, as a rule, can carry easily 8 per cent. moisture. It was the custom in the olden days to air slack every bale before it was put on to the pickers. We don't do that today. We immediately break our bales open into a cotton opener and by various methods either shoot or blow it to the picker house. It immediately goes over a series of picker plates and into the card room. By the time it has reached the card room the rapid action of the machines and the fans through which the cotton has been blown has taken out much of its moisture. It is dry and electricity affects it immediately to such an extent that without artificial means of inducing moisture it is possible to stop the running of a card simply by the electricity created on a cold, sharp, bright winter morning. Here's where the humidifier comes in. It was the custom in the old days to sprinkle water around the card, the evaporation of which created a moisture and offset the electricity. The next substitute was live steam, which was blown into the card rooms, usually from some exhaust pipe. The next was the humidifier and that little device has gone through several improvements so that today, by the use of a regulator, the humidity of any working room is apparent immediately and regulated. So you will see that the humidifier is not for putting moisture back into the cotton, in excess of what it had originally. Its purpose is to kill electricity in the mill so that the cotton will run better and not break up so badly on the machines over which it goes. I am sure most of the modern mills, with their efficiency methods and the way in which they are obliged to drive themselves in every way they can to meet foreign competition, would not know what to do without the use of this same little humidifier which you villify, or should I say Villa-fy?

Here I've spent enough time to sell three humidifiers, but it's all in a friendly cause to set a good man right.

Very cordially yours,

H. H. Blunt, Treasurer.

THE AUSTRALIAN VIEW OF FREE WOOL IN THE UNITED STATES

From Goldsbrough, Mort & Co.'s Annual Review

In view of the fact that Australia's prosperity is vitally dependent on her primary products, it is pleasing to chronicle another successful year in what is undoubtedly the most important branch—her wool output. The clip of 1913 will add some £32,000,000 ($160,000,000) to Australia's wealth, and that this result has been attained without any of the spoon feeding methods in force in other industries is effective testimony to the good work done by the grower.

Outstanding features of the season have been the inception of free wool into America, and the greatly increased volume of exports of frozen mutton and lamb. The former is one of the most important events for many years, and although it has been much discussed throughout the trade it is doubtful whether its far-reaching effects are yet sufficiently appreciated. The last free wool period was from 1894 to 1897, when imports into the United States jumped tremendously, and were effective in practically extinguishing the production of fine wool in that country. Duties were again imposed in 1897 and remained effective until 30th November, 1913, but even during that period America imported, on occasion, annually almost one-half of the wool she used.

The population of the United States at the Census of 1900 was 77,256,630, which grew at the last Census taken in 1910 to 93,402,-151. In the same period the number of sheep had fallen from 61,735,014 to 57,216,-000, the latest estimate placing the figures as 51,482,000, the same authority giving the year's killings as 15,000,000 sheep and lambs. It is reasonable to assume that the population of the States today closely approximates one hundred millions. We have therefore an increase in less than 15 years of nearly 30 per cent. in population, and a decrease of 15 per cent. in sheep. Small wonder then that America has to throw open her ports to products essential to life.

The substantial proportions assumed by the export trade of Australia in mutton and lamb arrest attention, and the increases in 1913 are so striking that we quote them. Compared with 1912 the exports of mutton and lamb show increases of almost 70 per cent. and 31 per cent. respectively. The growth of the export trade in meat means so large a proportion of our sheep will be wanted by the freezer that any increase in wool production can hardly be looked for. It must also be remembered that recent figures have been attained contingently with favorable seasons; dry years, to which the Continent is subject, will, with their advent, surely make serious inroads on quantities.

During the season just ended the market has been buttressed mainly by the Continental section, France particularly having bought freely and continuously throughout. America also has greatly helped and has been a potent factor in maintaining values, its purchases having been on much augmented lines. Declared shipments to the States from Victoria alone cover 46,733 bales, as against 24,000 bales from all Australia for the season 1912-13. As large quantities of old wool were in bond on 1st December in America its immediate requirements were curtailed by such, and it is only reasonable to assume that with the working off of these reserves a fuller demand may be expected for the next clip.

Bradford has, until the concluding sales, adopted an attitude that has been inexplicable. The manufactures there, in the face of an active demand on the part of other sections operating, consistently beared the market and sold forward at appreciably under ruling rates. To fulfil orders they had to come in in January and February when they assisted to place prices at the highest level of the year, and they are not to be envied in their respective reviews of the season's trading.

The season from a wool growing point of view has been all that could be desired, the Autumn rains were abundant and the resultant growth of feed luxurious. The Winter was dry and free from fluke, foot rot, and other concomitants of a wet year, and wool had a continuous and unchecked growth. Consequently a better grown clip has rarely been handled and the return to the grower has been on generous lines.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

WEIGHTING SILK

Editor Textile World Record:

We have been under the impression that there is no way of increasing the weight of silk without detracting from its strength, either at the time of the actual dyeing or several years afterwards. We have been advised that recent improvements made in the methods of tin weighting do not tend to cause this weakening. We are also under the impression that the same weighting results may be obtained by the use of nitrate of iron and gambier that are obtained with tin, and without any effect on the fabric. We would be pleased to learn your opinion of this. Ulster (2247).

The addition of weighting material to silk is strictly a chemical process, and to ensure that the silk shall retain its normal strength, the weighter must observe every precaution and not allow any substance to remain on the silk that could tender the fiber, either during the weighting or afterwards.

As silk is always weighted in the boiled-off condition, it is manifest that there remains on the fiber no trace of the soap used, else, when the silk enters the "dynamite" bath, free fatty acids are liberated and cannot be removed completely. These in time will cause a marked weakening of the silk. This possibly means that the silk should be perfectly clean before going into the tin bath, and implies extra time and plenty water for the washing.

After passing through the phosphate of soda bath, the same care is necessary, while after the final silicate of soda bath, where the fixation of the weighting actually occurs, the washing should be nothing short of perfect. The trouble found in a number of tendered silks has also been traced to the presence of sodium chloride, formed from traces of hydrochloric acid from the tin bath, and soda from the silicate bath. These with the normal moisture of the silk, combine to destroy the fiber. For this reason washing of the silk at every stage of the weighting becomes necessary. The foregoing remarks apply to white silk—silk weighted with tin, or "dynamited" silk.

As to iron and gambier weighted silk for black, the same careful washing is necessary, and no possibility of free fatty acids from any soap used or of sodium chloride being formed should be allowed. It is not believed that properly applied weighting materials cause deterioration of the silk fiber, but rather secondary products that are formed in time and sometimes long after the goods are manufactured.

The tendency of improperly compounded or carelessly applied silk finishes is to cause a deterioration of the silk, but it is only by a delicate analysis of such goods that the exact cause of the trouble can be located. The exact properties of secret silk finishes should be thoroughly investigated before they are applied to silk goods of value, not only as to their action at the time of application to the silk, but upon the colors as dyed. Storage of such goods for several may show remarkable changes. Beta-Naphthol.

NUMBERS ON A WILDMAN MACHINE

Editor Textile World Record:

Please inform me what the numbers indicate on the center stem nut of a Wildman machine.

Saxon (2415).

The Wildman Machine Co., Norristown, Pa., reply to the above question as follows:

The index marks on the center stem nut of the Wildman machines are for the guidance of the knitter in raising and lowering the dial so that he can make intelligent adjustments either up or down, or return the dial to a determined point by reference to the mark on the center stem nut.

BLEACHING KNIT GOODS

Editor Textile World Record:

We are sending you a piece of two and two knit fabric in the grey as it comes from our machines, also a piece of the same goods after coming through the bleaching process. You will note that after it is bleached it has a dead feel and has lost much of its elasticity. We pack 1,400 pounds of goods carefully in the kier in which we use a solution of 22 pounds of caustic soda, 15 pounds of concentrated ash and 3 quarts of chipped soap. We boil for 8 hours with a pressure of 22 pounds. The kier has two 2-inch circulating pipes. After boiling for 8 hours, we drain for one-half hour and fill the kier from the top through a distributing pipe which distributes the water over the entire surface of the fabric. We allow the goods to stand for one-half hour and then drain from the bottom. We fill again and then circulate the water for one-half hour through the outside circulating pipes and drain for about one hour before running in the bleach solution. This solution is 1° Tw. We let it remain in it for 2 hours, when we rinse in running water.

The sour bath is sulphuric acid and water. We rinse in two different tubs of running water by a continuous string over reels. Each reel takes 150 to 175 feet of fabric. We use one reel for the rinsing after running out of the bleach before going into the sour, and five reels for the water after going through the souring. We then run the fabric in a hydro-extractor for ten minutes to extract the water, and dry in a continuous dryer at 150°, then roll the goods ready for the cutting room. Please let us know how to get a bleach that will retain this elasticity and give a good color. Bleak House (2325).

In the bleaching of knit underwear one of the chief points is the preservation of as much elasticity in the fabric as possible, because the entire purpose of using a knit-fabric is to have a fabric possessing great elasticity compared with other classes of woven material. The sample of bleached material sent by "Bleak House" shows that much of the elasticity has been removed from the grey fabric by the processes of treatment. The goods should be carefully boiled. The bleaching process itself is a secondary consideration because if the boiling out is improperly conducted the fabric will be injured more than is likely to be the case when the ordinary methods of bleaching are used. "Bleak House" uses about 1.6 per cent. of caustic soda, about 1 per cent. of soda ash and a small amount of chipped soap and then boils for 8 hours under a pressure of 22 pounds. This treatment is far too severe. This pressure (22 pounds) means a high temperature, considerably above the ordinary boiling point. At such a temperature the alkali will seriously injure the cotton fiber. To preserve to a greater extent the elasticity of the fabric I would suggest using 1 per cent. of caustic soda, 1 per cent. of soda ash, and 1/2 per cent. of Turkey red oil or other soluble oil, boiling for 8 hours under a pressure of not over 12 pounds. This should be ample treatment for the character of grey goods as shown by the sample submitted and should give a satisfactory white with a bleaching liquor of 1° Tw.

In order to obtain a greater degree of elasticity in the fabric, that in place of using ordinary chloride of lime liquor, I suggest using a solution of sodium hypochlorite in preparing the bleaching liquor. This liquor can be prepared by the interaction of soda ash and chloride of lime solution or more conveniently and perhaps more efficiently by the use of liquid chlorine and alkali solutions. This method is becoming widely employed in the best bleacheries.

There is another point in the bleaching of this class of material which must be carefully considered in order to preserve proper elasticity of the fabric. These goods are woven in long rolls which are strung together in a continuous chain and then run over reels in the souring and washing operations. In running through these reel machines there is considerable drag on the fabric and this necessarily destroys much of the elasticity of the material. It is possible, however, by close attention to details so to adjust and operate the machines that there is very little tension on the cloth as it goes around the reel. The less tension there is in the running of the cloth, the more the elasticity will be preserved. The squeeze rolls in front of the reel which take up the cloth from the liquor in the tub below should be so placed that they are not too far above the surface of the liquor. The speeds of the reel and the squeeze rolls should be adjusted so that there is practically no tension on the cloth between the squeeze rolls and the reel. If these details are carefully attended to "Bleak House" will find that his cloth is very materially improved with respect to elasticity. Comarty.

STANDARD REGAIN FOR TEXTILES

Editor Textile World Record:

Please suggest a plan for buying yarns on a conditioned basis, worsted, wool, jute, cotton and linen. What are the percentages of regain allowed in European countries?

Fairhill (2402).

Following is a list of the regain standards that have been adopted in Europe for moisture in textiles:

Silk	11%
Wool	18¼
Cotton	8½
Worsted yarn	18¼
Carded woolen yarn	17
Cloths, worsted and woolen	16
Wool waste	16
Tops combed with oil	19
Tops combed without oil	18¼
Ordinary noils	14
Clean noils	16
Flax and hemp yarns	12
Jute	13¾
Shoddy yarn	13

The allowance for some of these materials, scoured wool for example, varies in different parts of Europe, but the standards given are those generally recognized. The percentages are based on the dry weight of the material. For example, 111 pounds of silk in standard condition would consist of 100 pounds of absolutely dry silk and 11 pounds of moisture.

CARBONIZING WITH HYDROCHLORIC ACID GAS

Editor Textile World Record:

When carbonizing with hydrochloric acid gas is there any danger of an explosion of the gas if the rags should get on fire in the machine, which is shown on page 195 of the May, 1914, issue? What is the right temperature for the hydrochloric gas process? Will the material be carbonized at 220° to 240° F.

Weymouth (2399).

In carbonizing rags in the apparatus shown in the May, 1914, issue of the Textile World Record, there is no reason to expect that an explosion, provided no undue volume of air is admitted. This could only happen by accident to the apparatus. Even in such a case it seems hardly likely, as the hydrochloric acid in gaseous form is at the same time largely diluted with aqueous vapor, because the usual 21° Tw. acid contains about 79 per cent. water.

The proper temperature for dry carbonizing with hydrochloric acid gas should be between 212° and 235° F. A good temperature to maintain is 230°, not letting it go below 235° if possible. The closer it is kept to 230° the more economical will be the operation.

Cromarty.

DYEING SILK HOSIERY

Editor Textile World Record:

Please give us information regarding the best methods of matching the silk with the cotton or mercerized top in a silk hose. We are having trouble in getting a good match as well as an even dye.

Monarch (2326).

The difficulty appears to be in failing to obtain an even shade on both the cotton and silk. The dyes suggested as having been used seem to be of the classes most employed for the purpose by dyers of these goods, but we think that it is not so much a matter of what firm supplied the dyes, as it is of experience or lack of skill in applying them. Dyeing stockings of this and similar bright shades to meet the demands of the current fashions for colors constitutes almost a trade by itself, and the writer has seen otherwise skilled silk dyers fail utterly to satisfy the demands of the mills.

To dye such shades, the dyes must be selected from the group of colors that will dye both fibers approximately the same shade from the one bath, and afterwards top with brilliant green crystals. The dyeing should be done as follows:

Prepare the bath with

10 lbs. Soap.
3 lbs. Soda.
60 lbs. Glauber's Salt.

The softest water only should be used. Boil the bath, and add the above items and the necessary amount of dyestuff as determined by laboratory tests, and dye for about 1 hour. This does not mean to keep the goods on the spring boil for the entire time. The cotton is dyed less than the silk, but the cotton takes on color in the cooling bath, consequently the dyer must keep a close watch as to just how the dyes are doing their work in the kettle. It happens that shading is frequently necessary for this class of work, and the dyer must have at hand for instant use some few dyes that will dye one or the other of the fibers in the stockings.

It is almost impossible for any colorist or dyer to make a combination of dyes that will dye silk and mercerized cotton mixtures identically the same shade.

After the body shade has been dyed, run the kettle off, give a rinse, and make up a fresh kettle with cold water, add a suitable amount of the basic green (brilliant green crystals) and work the stockings in it for some time, and then gradually increase the temperature to 125° to 130° F. and continue working, until the degree of brilliancy has been reached. Run off, and then give a light wash until no more color comes off.

Shading with the basic dyes requires that a small quantity of acetic acid should be used to ensure even results.

Berwick.

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HOSIERY BOARDS

Editor Textile World Record:

Please give us what you consider to be the best treatment of hosiery boards for use in the Philadelphia Drying Machine Co.'s dryer on ladies' seamless silk hose. We are troubled with "clouds" or spots in the silk.

Fairmont (2319).

In the first place we would suggest that "Manufacturer" dry the goods at a lower temperature than at present. He must do this by partly closing the valve which admits the steam to the heating coil of the dryer. If he finds that the low pressure steam gives him the desired results in drying he might put a reducing valve in his steam supply line, so that it would only be possible for the dryer to get a steam supply at the pressure which has been found to give the best results. It might also be well for him to see whether or not too much softener has been used in the dyeing and finishing of the hosiery.

We manufacture a great many boards for various hosiery concerns and when these boards are to be used for silk goods they are given a special treatment. This includes singeing, treatment with our special preparation, handling on special machinery and afterwards hand finishing. This results in a particularly high class board which is very smooth.—Philadelphia Drying Machinery Co.

CANVAS FOR GLOVES

Editor Textile World Record:

We would like to know the cost per pound for manufactured canvas or cheap fabric for gloves. This is made in large quantities from low grade cotton webbing made on knitting frames and is sold in whte, gray, tan, blue, etc.

Maxwell (2403).

Our knit goods correspondent informs us that this fabric is sold for 20 cents per pound, terms net 30 days.

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CURLING YARN FOR ASTRAKHAN

Editor Textile World Record:

Can you give me some information regarding curling machines for curling yarn for astrakhan fabrics? Buhl (2378).

We published an article on imitation astrakhan in our May, 1913, issue, written by our French correspondent.

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BLEACHING COTTON WASTE

Editor Textile World Record:

I have read the reply from "Mancunium" in regard to the bleaching of cotton waste, and having been one of Oldham's cotton waste bleachers I would like to take exception to some of 'Mancunium's" statements. In all my twenty-six years' experience I have never known cotton waste to be used for medical purposes. The trade calls for a very good white and if waste was used nothing but a yellowish white could be obtained. Nothing but the following wastes are used for medical purposes: Linters, card strips, card fly and Egyptian comber waste, the last-named for the best grades.

Mill sweepings are generally used for gun cotton and low quality wadding for clothing, after it has been cleaned and dyed. Hard and cleaning waste is bleached and cleaned by the following process: It is first put in a revolving boiling kier and boiled in lime for 12 hours. It is then washed through a rag washing machine, hydro-extracted and taken back to the boiling kier and boiled in a 3 per cent solution of caustic soda for 12 hours. It is then washed and in some cases hydro-extracted, dried and used again for cleaning waste. In other cases it is bleached and used for gun cotton or artificial silk making.

Cotton waste for medical purposes is

treated as follows: It is first boiled in a boiling kier with a false bottom. It is usual to place a sheet of burlap at the bottom so as to prevent loose fibers from getting in the circulation pipes; also a sheet on the top to stop the fibers from getting matted or as it is commonly called, fan blown. Boil in a solution of 2 per cent. caustic soda and soda ash and 1/2 per cent. of olein oil or Turkey red oil or some bleaching assistant. Boil from six to ten hours, wash while in the kier and then turn over into a stone cistern similar to the one described in my article of December, 1912. Chemic and sour. It is next rinsed free from acid and soaped and blued to the shade required, and washed. It is passed through a bath containing tartaric acid and hydro-extracted and dried on a hot air drying machine. After it is dryed it is sent to the picker room to be made into laps and then to the card room. After it is carded it is sent to the packing room to be put up in to packages of 1 ounce or more. It is then packed into boxes and is ready for the market. Morocco.

BLEACHING KNIT GOODS

Editor Textile World Record:

I have read with interest "Morocco's" reply to my article in the June issue. He states that by using the apparatus I have described the goods will get into a solid mass when boiling. The boiling, however, is not all done from the top with a vomit pipe. There is an arrangement which enables the goods to be boiled from the bottom. This prevents the goods from getting into a solid mass. The cloth is left in better shape than if boiled all one way as is the case when other kiers are used.

Now about the chemicals left in the wood. Washing the goods washes the wood at the same time. I know of one of the improved kiers in England that had been put in eight years before I came to America. It had been running every working day and was in good order when I left for the United States.

I have had a good opportunity of studying both English and American methods of bleaching and have found that the English bleaching plants of all kinds are invariably kept in good order and equipped with the most improved appliances, enabling the bleacher to do his work right. In the United States, however, there is a tendency to get along with poor appliances. The result is that in a short time every one is in trouble. This difference between the two countries may be due in part to the fact that the industry is concentrated in England and scattered among isolated plants in this country.

Hector.

HOLES IN KNIT FABRIC

Editor Textile World Record:

I am enclosing a sample of knit fabric, shown at Fig. 1, which contains a number of holes These do not come very often. The yarn is knit on a 7-inch striper. I have changed parts of the machine, but the holes still appear. Can you suggest a remedy? Essex (2395).

I have carefully examined the white mercerized knit fabric and have concluded that the yarn was burnt in bleaching. This often happens in bleaching white cotton and mercerized yarn and it will not show up until the yarn is used in knitting. It usually

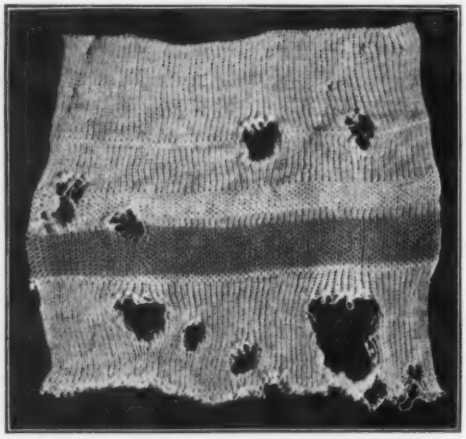

FIG. 1

comes in ends of yarn mixed through the cones. It is only a short time ago that I had the same trouble with a case of 2/12s white cotton. The yarn proved worthless and the longer it stood the worse it got. We finally had to throw it away. The bleacher said the fault was in the stock used and the yarn man said it was the bleacher's fault, so we let it go at that and got our yarn from another

source. I have no machine here to test the yarn, but would offer a few suggestions: First, have the knitter look over the needles and see that they are all milled the same, that the latch and spoon are all smooth. If he finds them all right then look at the machine and see if the dial is running true and not swaying, as this will make holes in tender yarn. Be sure that the cylinders and dial needles are evenly divided and that the edges are not rough, as this will cause cutting. See that the cylinder draw-down cam is ground to the right degree so that the needles will not rob one another when forming the stitch. Also see that the draw-down cam does not hold down more than two needles before beginning to release same. After getting these parts all right look to the dial draw-back cam and see that the dial and cylinder needles are set so they will not draw back together. The dial should be set one or two needles ahead of the cylinder needles. Look to the yarn guide and see that the yarn is going into the needles free and at the right point. Last, but not least, see that the take-up is perfectly clean and that the machine is working right. If all these details are attended to and the holes still appear, then the yarn must be at fault.

Bristol.

AVERAGE YARN NUMBER

Editor Textile World Record:

About the time the present tariff act was being passed we saw in one of your issues an explanation of the method of computing the average yarn number in cotton cloth under paragraphs 252 and 253. Goods like the enclosed sample, Fig. 1, have been invoiced to us as having an average yarn number between 20 and 39, but the customs examiner informs us that it is between 49 and 59. Kindly advise us which is correct.

Chicago (2413)

We have analyzed the sample of cotton cloth which "Chicago" encloses and find the average number to be 54.4, which is between 49 and 59, as stated by the customs examiner. Our analysis was made as follows:

(a) We cut a sample 1.8 by 2.4 in. (1/300 sq. yd.) and found it weighed 5.6 grains.

(b) We found 224 warp threads on the 2.4 inch side of the sample, which is equal to 93.3 warp threads per inch.

(c) We found 107 filling threads on the 1.8 inch side, equal to 59.4 filling threads per inch.

(d) We found that both warp and filling were two-ply.

(e) There were 152.7 (93.3 + 59.4) two-ply threads per square inch in both warp and filling, equal to 305.4 single threads.

(f) The average yarn number was then found by dividing 305.4 (threads per inch) by 5.6 (grains per 1/300th square yard), which is 54.5.

The mistake in invoicing was probably made by calculating the average number of the two-ply yarn as if it were single. That would make the average number 27.2, instead of 54.5, and would bring it between 20 and 30, as stated on the invoice. This, however, is wrong as the tariff law (paragraph 253) contains this provision:

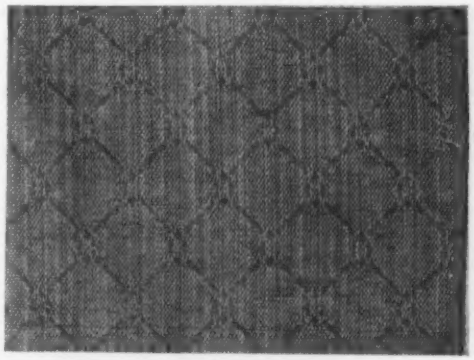

FIG. 1

In counting the threads all ply yarn should be separated into singles and the count taken of the total singles.

We have sent "Chicago" a booklet and other articles explaining the origin of and method of determining the average yarn number for tariff purposes.

The Italian silk crop for 1913 was about 22 per cent. below that of the preceding year. There was a deficit of about 19,565,000 pounds of cocoons in Italy, and the deficit of other European countries was reported at about 4,630,000 pounds, so that there was a shortage in Europe of almost 24,200,000 pounds.

Knitting Department

THE KNIT GOODS SITUATION

The western travellers are either home or on the way home and are not very well satisfied with their trip. If the weather helps the merchants out, the operators will buy in a more liberal way, but they will still be conservative. There are too many national and international events going on at the present time for any one to foretell with accuracy just what will happen. The buyer still has his weather eye on the financial standing of his firm. The possibility of having a big stock with business in an uncertain condition, is not tempting for the buyer. All good merchants at present have their ears to the ground, waiting to hear the approach of an enemy or friend. They want to be prepared for the enemy, but be it a friend who approaches, he will try to be the first one to entertain him with everything he may need.

The sweater coat business is at a standstill at preesnt and with few exceptions orders have been placed for samples only. One reason is that we have had a very backward winter and another is the uncertainty as to what to buy. When it comes to a lady's coat, the color is a very important item and this cannot be determined at present. There is a strong tendency to fancies. The Olympian Knitting Mills are showing some novelties in box coats in the better grades, two tone effects with a new style collar and fancy buttons. One manufacturer of sweater coats is showing a line of boys' two-piece suits comprising a Norfolk style coat and knickerbocker pants, made of a firm fabric. The first thing a buyer looks for in a morning paper when he is away from home is the weather report from his section. If it is cold he smiles a welcome to the various salesmen, otherwise his enthusiasm has a damper on it.

The Chalmers Knitting Mills have put on the market a handsome two-piece rib garment for a fifty cent retailer.

The Southern manufacturer of men's rib shirts and drawers and union suits has made rapid strides. The New York state manufacturer used to smile in derision when a Southern garment was mentioned in competition with his make, but today he is very anxious to see what his Southern competitor has to show. The merchandise that the Mayo Mills are showing explains the reason why. The Southern manufacturer has received attention.

The Hanes Mill is to try more persistently than ever to get all of their customers to sell their label garment at a fair profit. They deserve recognition, for as a rule the Southern garment has been bought by the jobber to be made a foot-ball of, but this mill has a higher ambition for their merchandise. If they confine themselves to their present ideals and keep their merchandise equal or better than some of their competitors, they should be one of the first mills to sell their production. There are several other Southern hosiery and underwear mills that deserve recognition.

The export orders still keep coming in but in a smaller volume and they are more varied than they were. Some hosiery mills have stopped taking export orders, especially on wool hosiery, as they must hold back a certain amount of their production for their regular home trade. At first the demand was only for wool hosiery. Recently a large amount of eighty-four needle half-hose has been exported. One wide-awake domestic manufacturer, knowing the shortage of wool socks, has made very creditable socks out of wool underwear cloth. The seams are well covered and this case shows what can be done when necessity arises. The same manufacturer has made up some blankets of sweater material, napping them to give them the blanket appearance.

John Mercer of England in 1850 took out a patent for the process now known as mercerizing.

THE FLATLOCK MACHINE SEAM

We have previously referred to a new sewing machine that we believed would mark a distinct advance in the art of seaming knit underwear. The successful working of the "Flatlock" machine now in use by a large number of prominent manufacturers sustains the preliminary announcement. For two years severe mill tests have been carried on under most critical conditions, and the results achieved have justified the earlier plan of withholding the machine from a more general use until all experimental details had been worked out to completion.

High speed is one of the efficiency essentials of manufacture today and has been provided for in the construction of the Flatlock machine. Those who appreciate fine mechanism will find much in the machine to command their admiration, not only as to its unique and beautiful lines, but also as to the methodical and scientific arrangement of all the working details. One of these details is the novel method of "feeding off" the arm when closing the lengthwise seam of the sleeve or leg of a garment. This results in a material saving of labor because it is no longer necessary to withdraw the tube from the arm after it has been seamed; it drops completely from the arm.

Manufacturers of knitted underwear are aware that for years the buyer has demanded a flat seam. The Flatlock seam is a perfect union of abutted edges no thicker than a single piece of the fabric itself and so smooth on the inside of the garment that it can be worn without leaving a mark or crease upon the most tender flesh. The junction of all seams, as at the scye under the arm, or of the gussets in union suits, is so flat and smooth as to leave nothing to be desired, and the strength of seams even on sheer fabrics is beyond criticism.

The Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York, builders of the Flatlock machine, advise us that more than 4,000,000 garments, including union suits, have already been finished on this machine. As its merits become more generally known, its use will rapidly increase to the mutual profit of knit underwear manufacturers and the public as well.

Both the Flatlock machine and the product are patented in this country and abroad.

The word "Flatlock" does not appear in any of the standard dictionaries. Like the word "Overlock" it was coined by the Willcox & Gibbs Sewing Machine Co. Both words are registered as trade marks in the United States Patent Office, as well as in foreign countries.

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A SHAKER COAT FOR GIRLS

BY HAWICK

A very serviceable and practical shaker coat for misses and young women is shown in the accompanying illustration. The body of this coat is made straight up and down and full, being similar to the body of a man's shaker coat except that it is made thirty-

A SHAKER COAT FOR GIRLS

three to thirty-five inches long and the neck opening is fashioned slightly lower. As this is a high-priced garment it is advisable that the neck opening and arm-holes be fashioned instead of being cut. The sleeves are also made similar to the men's garment, but slightly fuller at the arm-hole. The collar and lapel are made in two parts, being joined

together in the center back. This should be done by hand and the machine stitch should be picked up so that the joining will be invisible. The collar also is fashioned.

The belt is made tubular, being about five inches wide. It is sewed down on both edges either by machine or by hand. The pockets are made either square or triangular, as shown in the illustration, and are either looped on by hand or sewed by machine. The underside of the front of this coat is faced with sateen. This makes a firm back for the buttonholes and buttons and also gives the front of the coat a much smoother and neater appearance.

In making this coat the most prominent parts should be put together by hand. The first operation is joining the shoulders, which is done by hand. Then the facing of the button and button hole side, which is done by machine; putting the cuffs on the sleeves, by hand; putting sleeves in by hand, and then joining the collar in center back and putting it on by hand. The belt is then sewed on and the pockets sewed to the belt. The button holes are then made and the buttons sewed on. The collar is finished with two loops and buttons. This coat is usually made in the plain stitch, but can be made in other styles. These coats are packed one in a box. The buttons are usually larger than those used on men's coats and very catchy appearing garments can be obtained by using buttons of contrasting colors.

A NEEDLE CARRIER FOR KNITTING MACHINES

The needle carrier shown in the illustration and which has recently been patented in this country, relates to that class of knitting machines in which are employed a plurality of sets of needles operated by cams in different planes, the object of the improvement being to lessen the weakening of the needle carrier which has heretofore been causd by the cutting of the grooves for the guidance of the needles.

Fig. 1 is a vertical sectional view of part of the cylinder of the improved knitting machine; Fig 2 is a horizontal section on the line, a—a, Fig. 1; Fig. 3 is a horizontal section on the line, b—b, Fig. 1; Fig. 4 is a vertical section of part of another form of needle cylinder embodying my invention; Fig. 5 is a face view of part of the same; Fig. 6 is a horizontal section on the line, c—c, Fig. 4, and Fig. 7 is a horizontal section on the line, d—d, Fig. 4.

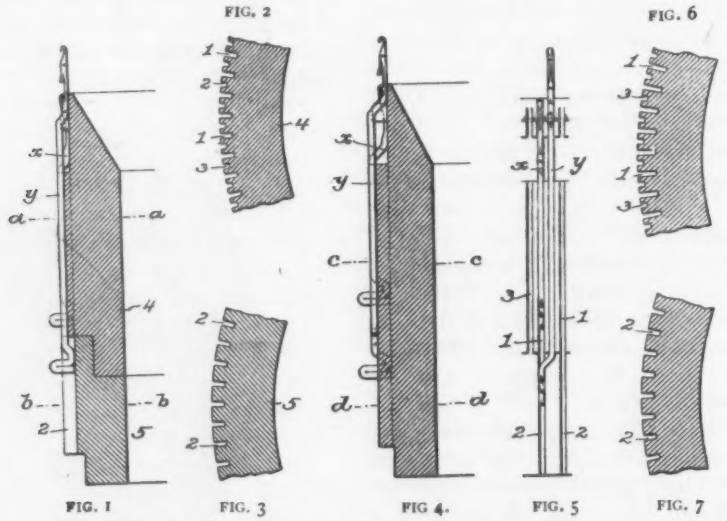


FIG. 1 FIG. 3 FIG 4. FIG. 5 FIG. 7

In machines of this type it is customary to cut deep grooves in the cylinder, dial or other needle carrier, for the guidance of the needles, in order to provide a proper side bearing for that portion of the needle upon which the butt is formed. The cutting of these grooves materially weakens the cylinder or dial, especially in machines of fine gauge. In these machines, two sets of needles are usually employed, one set being

shorter than the other and having their butts actuated by knitting cams located in one plane, the longer needles having their butts actuated by knitting cams in a different plane from those which actuate the short needles.

The improvement consists in cutting the deep grooves only in that portion of the needle carrier which corresponds to the extent of reciprocating movement of the needle butt and latch-carrying portion of the needle, consequently the grooves for receiving the longer needles can, throughout a large portion of their extent, are shallow, and the weakening of the needle carrier by the formation of these grooves in it is correspondingly lessened.

In the needle cylinder shown in Fig. 1, the grooves for the shorter needles, x, are deep throughout, as shown at 1, but the grooves for receiving the longer needles, y, which alternate with the shorter needles, are deep only in their upper and lower portions, as shown at 2, these portions of the grooves corresponding to the extent of reciprocation of the butts and latch-carrying portions of the long needles, but the remaining portions of the grooves in which the stems of these needles travel being shallow, as shown at 3, Fig. 2.

To facilitate the cutting, by the usual milling tool, of the grooves of which are partly deep and partly shallow, the cylinder is made in two parts, 4 and 5, the upper part, 4, having, in alternation, deep grooves for the guidance of the needles, x, and shallow grooves for the guidance of the needles, y, the lower portion, 5, having deep grooves for the guidance of the needles, y, only, whereby each groove can be formed by a through cut of the milling tool from end to end of that portion of the cylinder in which the groove is contained.

Figs. 4, 5, 6 and 7 show the lower portions of the needles, y, guided in the same grooves, 1, which serve for the guidance of the short needles, x, the face of the lower portion of the cylinder being recessed. In this way the stem of each long needle can be bent laterally, as shown in Fig. 5, in order that the upper portion of said stem can be guided in the shallow grooves, 3, which alternate with the deep grooves in the upper portion of the cylinder.

THE "POINTEX" FULL FASHIONED HEEL

BY LIGNY

The "Pointex" full fashioned heel is comparatively new and can be made in two ways. The shaped heel can be made entirely of cotton by overlapping the silk and cotton each alternate course. This makes a very durable heel. The silk may be run all around the ankle and the shaped heel effect produced by manipulating the splicing carrier rod. Fig. 1, 3B, shows the ankle part of a knitted leg attached to the needles, showing the shaped heel just finished. The plain part is silk. The heavier place, 1B, is caused by the overlapping of the silk and cotton; 2B is the solid cotton. 3A is the worm box which holds the stops and limits the movement of the carrier rods, 6A and 5A, on one side, the other side of the fabric being controlled by a set of stops and worm box in the same manner at the other end of the machine. Commencing at Z1 where the silk carrier, 1, has been knitting the full width while 3A stands further out, as shown in the dotted lines, the carrier, 2, which has been of action, is moved into the position as shown. The stop, 1A, is raised so that as 3A moves in, the carrier rod, 6A, will move out to the selvage, being stopped during this by 8, which stops friction, 7, from moving the rod, 6A.

Starting with a movement to the right, carrier 2 will rest over 1. As friction, 6 and 7, move to the right, 1 and 2 are carried together for a distance of four needles, when stop, 4, coming in contact with 9, holds the rod, while carrier, 1, moves to the other side Z2, the movement not being shown, as the carrier is operated in the same manner as Z1. In this position with 1 at Z2 and 2 standing four needles to the right of Z1, 4A is turned automatically and moves 3A in a distance of two needles. This operation is called narrowing, although the narrowing points are raised out of action at this time.

On the return of 1 to Z1 this carrier will not reach the selvage, as its supporting rod,

5A, is checked by 9A. In going as far out as the second needle, however, it overlaps two needles of the cotton thread of the carrier, 2, which has been moved to the selvage by the raising of the stop, 1A. This makes two needles on the outside with the cotton fabric, two needles with cotton and silk knitted together and the center silk. The machine narrows again if it is desired to make a short heel, which is governed by the narrowing chain. It is readily seen at each narrowing that the movement of 1 becomes more and more limited and the movement of rod and carrier, 1, in the same position in which 9A had previously held it.

With 3A standing in position of dotted lines, carrier, 2, rests over carrier, 1, and both carriers move to the right, a distance of four needles. When carrier, 2, is stopped as before by carrier, 4, striking, 9, carrier, 1, passes to the other selvage, Z2. The machine then narrows and the carriers move to the left, both moving to the selvage, Z1. The machine having narrowed in the last course, 3A is two needles farther in, so that when the carriers move to the right again, carrier,

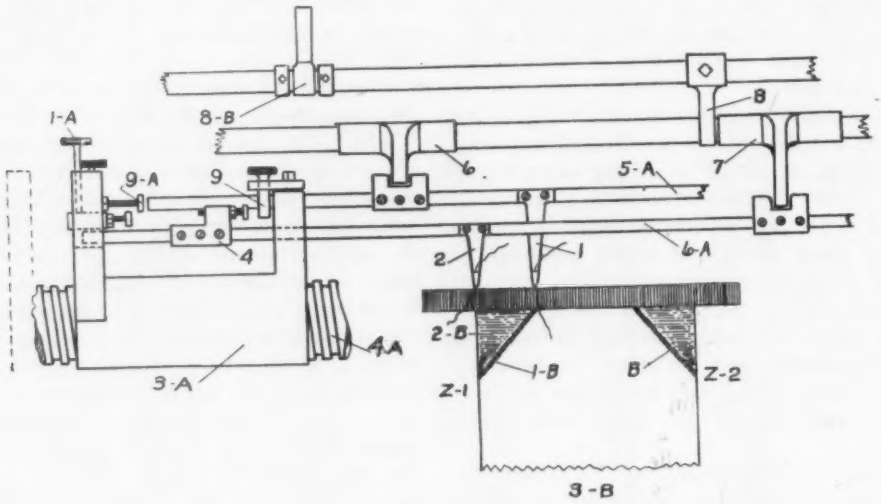


FIG. 1

2 greater, until the desired width is reached, when 3A is racked out again and the carriers placed in their proper position to finish the stocking in the usual way.

The same effect can be produced with a splicing thread which would be a silk thread and is usually a No. 3 or No. 4 strand Japan tram silk twisted together about 2 1/2 turns per inch. Cotton can be used and is more durable if plaiting tackle is used, thus avoiding a streaked appearance in the heel fabric and showing only the silk on the face of the hose. In this case stop, 9, is raised so it will not interfere with the movement of the carrier rod, 5A, which carries 1 from selvage to selvage. The swinging stop, 8B, is placed in contact with the friction box, 6, holding the 2, moves to the sixth needle, and carrier, 1, again moves to the selvage, Z2. The machine narrows again and the carrier moves back to the selvage at Z1. Carrier, 2, reaches the eighth needle the next time. The narrowing is repeated until the spliced part is the proper width. During this time a carrier has been operating at C, the same as carrier 2 on the left side with its frictions and stops arranged in the same way as at the other end of the machine.

The value of the imports of lace, edgings, embroideries, etc., into the United States from Switzerland in 1913 amounted to $10,680,079, as compared with $13,027,802 in 1912.

THE MANUFACTURE OF ATHLETIC HOSE

BY HAWICK

When one stops to think of the number of people participating in athletics they get a vague idea of how great the demand is for athletic hose. The dealers having the best assortment of styles are the ones that are most successful in this class of work. Athletic hose is a specialty, but the demand is so great that it is a case of a specialty becoming a staple article. The goods are made on a latch needle machine, usually with a 12 gauge and 96 needles in the cylinder. These machines stripe automatically and are speeded rather high. The accompanying illustrations give an idea of the different stripes which can be made.

FIG 1 FIG. 2 FIG' 3 FIG. 4 FIG. 5 FIG. 6 FIG. 7

The calf stripe, shown at Fig. 1, is probably the best seller. This is made on the legger, then put on the transfer wheel, and transferred to the footer. The foot is made of 2 ends of 1/10s yarn, natural color. The toe is then closed on the looper and the top is finished on the crochet machine. All athletic hose is made in the same manner, except the sanitary hose shown at Fig. 2, and the footless hose, shown at Fig. 7. The sanitary hose is made on the footer with 2 ends of 1/16s natural color yarn. The hose is worn in conjunction with the footless hose, the idea being to keep the colored yarn away from the skin. The footless hose is made on the legger and it is slightly longer than the regular hose. It is cut, as shown in the illustration, and the two bottom pieces are looped together while the top and bottom are finished on the crochet machine.

The hose with a vertical stripe, shown at Figs. 5 and 6, is something new and which will no doubt prove popular. This hose is made by running a one color stripe on the outside feed or stitch, and turning the stocking, which is then footed.

The hose shown at Fig. 6 is made similar to Fig. 5. For instance, if a navy hose is wanted with a navy and white vertical calf stripe, start all the bobbins running on navy and then when ready to stripe take off a navy bobbin on the outside feed and replace it with a white one. When the stripe is finished the bobbins are changed to be all navy to finish the hose.

Many different styles of ribbing on athletic hose can be accomplished by dropping the needles. Dropping is done by taking needles out in proportion to the rib wanted. The following sizes of yarn are well adapted to the manufacture of hose: 2/10s cotton, 2/8s cotton, 2/21s merino, 2/13s merino and 2 ends of 2/18s worsted.

The finishing of hosiery has a great deal to do with their sale. For instance, if a hose is well made, but is finished and boxed slovenly it is next to impossible to sell it, whereas a poor grade of hose if finished and packed neatly, has some chance of being sold. Great care should be taken in boarding and boxing.

The hose which is straight up and down has to be shaped. This is done by first steaming them, then putting on a hosiery board, straightening the ribs and putting them in a drier to dry. After they are dry they are ready to stamp, fold and box. The

size is stamped near the toe, and the trade-mark about in the center of the foot. This stamping should be done with a fast color ink. The hose is then folded in pairs and packed a half dozen in a box. It is advisable to put paper bands on the two top pairs in the box as this makes a much neater appearance. It also affords another opportunity of using the trade-mark.

A CIRCULAR KNITTING MACHINE

Improvements in circular spring needle knitting machines are the subject of a patent recently granted to Robert W. Gormley, Troy, N. Y. The object is to provide a machine for the production of an elastic fabric having the appearance of ribbed goods. The spring needles are arranged in staggered relation and the bur wheels are constructed to co-operate with the needles so that rows of loops, which alternate with each other, according to the staggered arrangement, are produced, making the surface of the cloth corrugated, one row being higher and the other being lower.

Fig. 1 is a plan of a circular machine showing the improvements. Fig. 2 is a face view of the fabric. Fig. 3 is a detail side elevation of a set of needles and the base. Extending upwardly from each lead are two spring needles, one being set back farther than the other. Each needle is of the usual type, the beard being clearly shown in Fig. 3. When the leads are assembled in the cylinder, the needles form the staggered row. The blades of the bur wheel are alternately short and long and co-operate with the needles. In advance and inside of the bur wheels and the needles is the usual push down wheel. Spaced from the bur wheel and disposed so as to act on the outer surfaces of the needles is a presser wheel formed with a series of shallow depressions and an alternate series of deeper depressions, which engage the beards of the staggered row of needles. An inclined landing wheel lands the loops over the beards in the usual manner. Spaced from the landing wheel and operating inside the needles is an inclined cast off wheel, which casts the loops from the inwardly

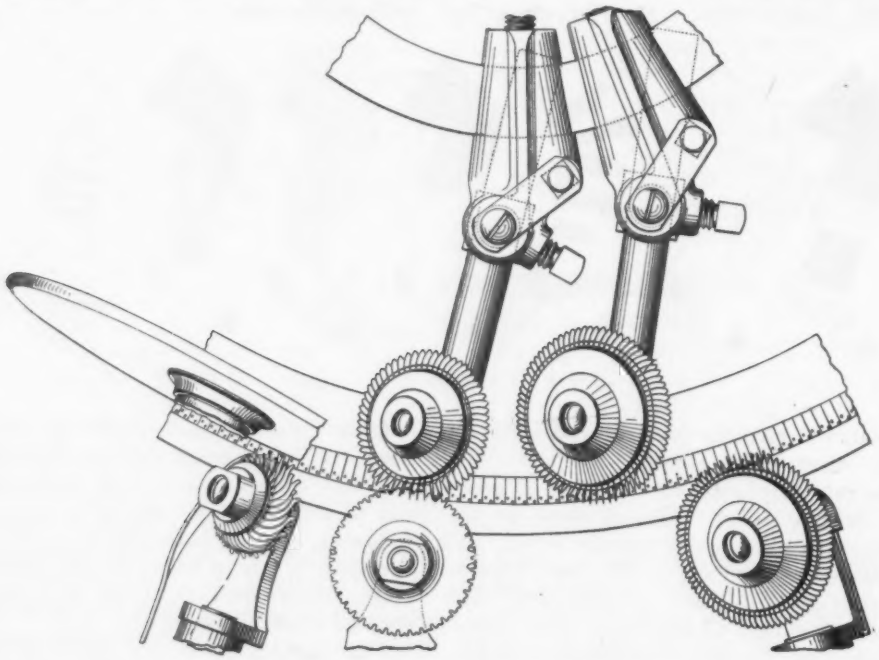


FIG. 1. PLAN OF A CIRCULAR KNITTING MACHINE

staggered needles in forming the fabric. An inclined cast off wheel is set outside the row of needles, which casts the loops from the outwardly staggered needles uniformly and evenly for the entire row of staggered needles.

The yarn passes over a guide to the ends of the blades, inside the beards of the needles. The yarn lies in a zigzag path in the upper ends of the beards. During this time the cylinder carrying the needles is revolved

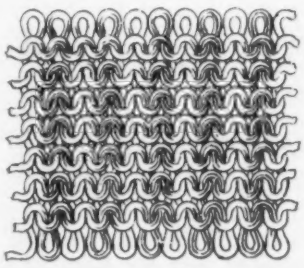


FIG. 2

FIG. 3

and the blades of the landing wheel elevate the previously formed loops over the closed beards of the needles, the beards being closed by the presser wheel.

The presser wheel is provided with two sets of notches, the walls of which act on the beards of both the in and out staggered needles, to permit of the landing of the respective loops. The loops having been landed over the beards, the wheels cast off the loops in the usual manner. As the blades of the stitch wheel and the needles upon the cylinder are staggered, the result in the fabric is rows of loops, which alternate in and out in harmony with the staggered row of needles and the staggered blades of the stitch wheel. This gives a ribbed effect on the face of the fabric and also produces great elasticity, as shown in Fig. 2. The finished product is to all intents and purposes substantially a ribbed fabric produced with a single set of spring needles.

Wild silks of India were first utilized in 1857 by Lister & Co., of England, and made into silk yarns at Manningham.

KNIT CLOTH FOR GYMNASIUM CLOTHING

BY HONEOYE

Gymnasium pants were made exclusively out of woven cloth and hundreds of dozens are sold each year. The most popular garment was one made out of a cotton flannel. These garments were made in a grey black and sold for about $10.00 per dozen. They were sold in about every city where there was a college, high school or gymnasium. It did not take long for the manufacturers of athletic knit goods to see an opportunity in this style garment, if it could be made of knit cloth. This caused several to experiment with their machines to see if they could not get a cloth somewhat like the cotton flannel. The main idea was to get a grey

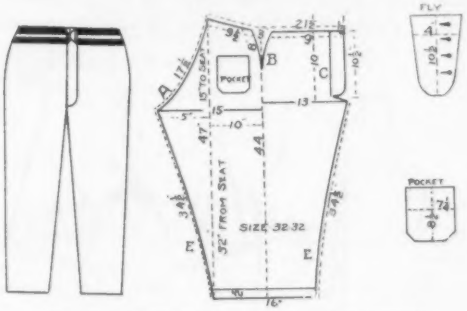


FIG. 1. PATTERN FOR GYMNASIUM CLOTHING

cloth slightly speckled or intermingled with black. They finally succeeded in doing this. Some of the manufacturers did it by twisting an end of 1/10s cotton knitting yarn with an end of 1/10s hard twist. While still others did it by running an end of 1/10s soft and an end of 1/10s hard twist through each feed. By using these sizes of yarn they were able to get a firm piece of cloth and make a garment to sell for about $8.50 per dozen and were in a fair way to compete with the manufacturers of cloth pants. A pattern for this garment is shown at Fig. 1.

After the garment is cut the first operation is the sewing of the back seam, A. The openings, B, are then sewed and the pockets sewed on. The fly which is doubled on the dotted line, has buttonholes made in it as shown. The front of the pants is turned back at C. The buttonhole piece is sewed onto the inside of the left side, while the

buttons are sewed on the right side. The belt, which is made of webbing, is then sewed on. The small seam, D, is then closed up. The garment is then sewed around the inseam at E, thus finishing the legs of the pants. The bottoms are then hemmed and a piece of elastic 5/8 inches wide sewed on. This elastic is cut 7 1/2 inches long.

AN IMPROVED UNION SUIT

An improved union suit for which a patent has recently been issued, is shown at Figs. 1 to 6. The new construction consists in providing the crotch of the drawers with a gore of knitted fabric which is elastic or resilient in comparison to the fabric of which the body of the drawers is composed.

Fig. 1 is a front elevation of the improved

FIG. 2

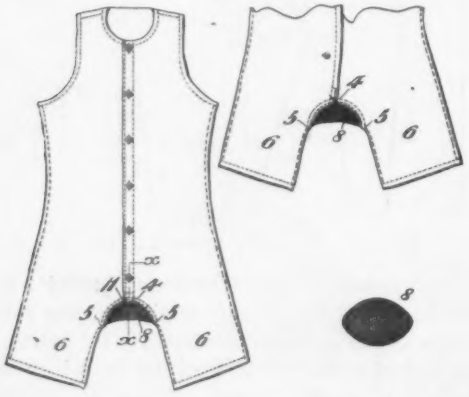


FIG. 1 FIG. 3

undergarment; Fig. 2 is a rear elevation; Fig. 3 a plan view of the gore; Fig. 4 longitudinal section of a portion on line, x—x, Fig. 1; Fig. 5, a front view of a portion of the garment, the gore having been removed; Fig. 6, a longitudinal section of a portion on line, y—y, Fig. 5.

The union underwear is composed of the undershirt and drawers, which are made of fabric comparatively inelastic. The fabric of the drawers is separated at the crotch from the top, 4, downward to the points, 5, on the inner sides of the leg, 6. The edges of the separated portion are cut away in an upwardly curved direction, forming arches of the edges on both the front and rear of the drawers at the crotch and portions below. In these arches, a gore, 8, is inserted, which is composed of a piece of knitted fabric folded upwardly at its center line, the fold bridging from one point, 5, to the other at the bases of the arches; the edges of the gusset being sewed or stitched to the edges of the arches, thus joining the front and rear pieces of the drawers at the crotch and portions below. This closes the gap occasioned by separating the pieces and bringing the botom fold of the gusset in contact with the

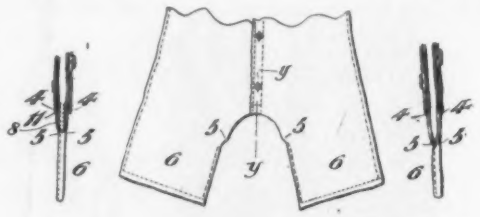


FIG. 4 IG. 5 FIG. 6

crotch of the wearer, and the sides of the gusset in contact with the sides of the upper portions of the legs of the wearer, so that the gusset prevents a soft fabric, preventing chafing or other discomfiture. The gusset yields freely in all directions due to the motions of the wearer avoiding material strain on the gusset and adjacent portions of the garment.

Attention is directed particularly to the fact that the gore, and consequently the edges of the separations of the crotch, and adjacent portions of the legs, curve downwardly from the crowns of the gore to the side edges of the bottom fold, thus conforming to the anatomy of the body of the wearer at the places of occupation of the gore and drawers in gentle and continuous curves, preventing severe buckling of the fabric.

The inner sides of each leg are stitched together and closed as shown. The stitches of the sides and edges of the gore and those of the separated edges of the crotch extend in the direction of the arch, meet at the legs at the terminals of the bottom fold of the gore, and continue down to the bottoms of the legs. The front opening piece of the garment extends to the crotch and the lower end of the band overlaps the top edge of the front crown of the gore is at 11. The crown

is stitched to the overlapping portion of the band, which thus acts as a hanger for the front wall of the gore at the crown and provides a reinforced connection for the gore with the crown of the front arch to the crotch of the drawers, enabling the crown of the gore to stand the severe upward strain of the garment to which it is subjected at the crotch. The hem of the rear opening of the garment is continued downwardly so as to overlap the top of the rear crown of the gusset, and is stitched to the crown, acting as a hanger for the rear wall of the gore at the crown and serving also to reinforce the gore with the rear arch of the crotch of the drawers.

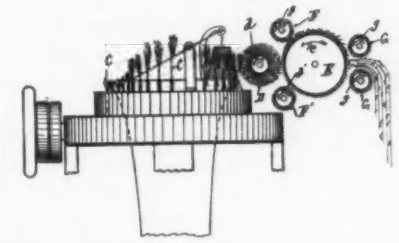
A FLEECE-LINED FABRIC

An improved mechanism for knitting fleece-lined goods shown at Figs. 1 and 2 and recently patented in this country is described by the inventor as follows: In making fleece-lined knit fabric, the fleece is produced either by combing out a portion of the fiber of the yarn on one side of the fabric after the knitting is completed, or by knitting into each stitch of the fabric, loops of fiber, the ends of the fiber of which loops all appear on one side of the fabric and constitute the fleece. In the latter case the loops are produced by a mechanism which presented a thin bat of fiber in such a position that the hooked needles of the knitting machine could be thrust through the bat and on being withdrawn retain small tufts of fiber, which, together with the thread are drawn through the loop on the needle. The object of this invention is to place on each needle a tuft of fiber just before the needle hooks engage the thread so that the thread will hold the tuft in the hook and the thread and tuft will be drawn through the loop on the needle together, leaving the free ends of the fibers composing each tuft projecting from one side of the fabric.

A brush receives the fibers suitable to form a fleece-surface, and is placed adjacent to the needles so that the hooks will gather a tuft of fibers as they pass through the brush, and carry them together with the incoming thread through the loop on each needle.

Fig. 1 is an elevation of a portion of a knitting machine, with the improved fiber-feeding mechanism combined therewith. Fig. 2 is a sectional view. The knitting machine is provided with the usual driving gear and hooked needles. At one side of the machine adjacent to the hooked needles a brush, D, is provided with long and flexible teeth, which permit the hooked ends of the needles, C, to pass freely. This brush, D, rotates in the direction of the arrow, d, so

FIG. 1



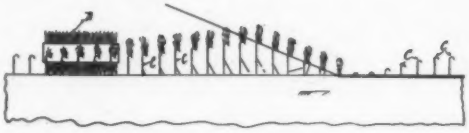


FIG. 2

that the teeth travel upward with relation to the hooked needles. Any fibers carried by the brush will be carried thereby into the open hooks of the needles C. Adjacent to the brush is placed a suitable feed mechanism adapted to maintain a supply of fibers to be placed on the needles. This feed mechanism is made in the form of a carding-drum, E, of usual construction, and rotates in the direction of the arrow, e. Adjacent to the carding-drum are mounted carding-rolls, F and F′, which rotate in the direction of the arrows, f and f′. The surfaces of the rollers travel faster than the surface of the carding-drum, so that the fibers on the drum will be properly combed before being presented to the brush. Adjacent to the carding-drum are the feed rollers, G, which rotate in the direction of the arrows, g, and carry a bat of wool or other fibers to the carding-drum.

Dyeing, Bleaching, Finishing, Etc.

THE DYEING OF MILITARY KHAKI

BY BETA-NAPTHOL

The present European war is the direct cause of a number of American textile mills taking orders for cloth, underwear, blankets, etc., for the belligerents. Under normal conditions, mills as a rule are not particularly anxious to take government contracts, but when the present opportunity is practically forced upon them at possibly good prices, there is no alternative but to accept the orders and get busy. In this country, the only colors that seem to interest the military authorities are the peculiar olive-drab shades as observed on the two-faced cotton cloth. and also on the woolen garments used by the army. This peculiar shade of olive-drab has been adopted by the army authorities after a long series of trials with cloths of different colors, and it proved to be the shade best suited for the United States troops. While the shade cards made and distributed to the trade in this country by the various German dye firms give directions for dyeing many shade of military cloth, the directions for dyeing and the color combinations suggested apply almost entirely to the field uniforms of European armies, which, with the possible exception of the British, are unsuited for this country, or for meeting the requirements of our war department.

Unlike most European nations, our quartermaster's office does not prescribe the particular dyes that shall be used in producing given shades. contenting itself by describing the tests adopted and supplying a standard sealed sample of the cloth against which all deliveries are to be made. During war times, the mills have little or no difficulty in having accepted by the inspecting officers, deliveries of cloth that would, under peace conditions, be promptly rejected. By this is not meant that any cloth offered by a mill or agent will be accepted, but that minor differences in shade are accepted. Military olive-drab for the army is always made from wools that have been dyed in the raw, and then mixed in proper proportions to produce the desired shade. As a rule, the softest effects are obtained by four-part mixtures, a medium brown, a light yellowish-brown, a black, and finally white wool in sufficient quantity to give the proper blend.

Where chrome colors have been used, and enough time taken to ensure their fixing on the fiber and for the after-treatment, no fear need be felt as to the successful outcome when making the government tests, but if the dyeing is done too quickly, or if the wool has not been given a good preliminary scour, or if the final washing after dyeing has not been thorough, there is likely to be a slight weakening of the finished shade. The shade of United States olive drab is produced by the following recipe, which was worked out to meet the tests imposed by the army specification: Dark brown on 250 pounds of loose wool, 30 ounces anthracene chrome brown D W N, 51 1/4 ounces anthracene yellow C, 6 ounces anthracene blue black B E, and 45 ounces of bichrome for fixing. Lignt brown on 250 pounds of loose wool, 12 ounces anthracene chrome brown D W N, 44 ounces anthracene yellow C, 16 ounces anthracene blue black B E, and 40 ounces of bichrome. The black for the mix is dyed with 17 1/2 pounds anthracene chrome black P P C extra, and 5 3/4 pounds of bichrome. The mixture for a 500-pound batch of olive drab will consist of about 80 pounds of the black, 162 1/2 pounds of light brown, 80 pounds dark brown, and 177 1/2 pounds of pure white wool.

A process was brought out several years ago which consisted in treating wool with certain chemical salts, principally bichromate of potash, for the purpose of giving to it a peculiar greenish-gray tone, and which was said to possess increased light-resisting properties. Such specially treated wool offers no advantage whatever as a substitute for white wool in olive-drab mixtures, al-

though it is believed to be used in certain cloths for the German military service.

The military authorities of different countries use widely different methods to arrive at a satisfactory shade to meet their requirements. What holds good for one country is generally unsuited for other countries. The so-called field-gray of the Germans has been extolled as a most desirable shade for soldiers' wear, but it is to be doubted if it has any advantages over the new and peculiar blue-gray of the French in so far as serving to render the wearers less visible, or even over the United States, British or Japanese shades of olive drab. There is no doubt but that the British war office, having had more experience in field campaigning is as well able to judge of the proper shade of cloth for such use as any other government.

The British olive-drab shade is dyed as follows: Gold for 500 pounds of loose wool, 31 ounces anthracene chrome brown D, 24 ounces anthracene chrome blue F, 5 pounds anthracene yellow C and 5 pounds bichrome. For brown on 500 pounds of loose wool, 10 1/2 pounds anthracene chrome brown D, 6 1/4 pounds anthracene chrome blue F, 64 ounces anthracene yellow C and 5 pounds bichrome. For light blue on 500 pounds of wool, 5 pounds anthracene chrome blue F and 3 3/4 pounds of chrome. The several dyeings are mixed in the following proportions: gold, 265 pounds, brown, 85 pounds, light blue, 22 1/2 pounds, and white wool, 127 1/2 pounds, to make a total of 500 pounds. To ensure the best results, the wool should be thoroughly scoured and rinsed. The dyeing should proceed at a regular temperature, and allowing ample time for the fixation to be effective.

The dyeing may be done either in dyeing machines or by hand. Much loose wool is dyed by hand, but it is doubtful if the best results are then obtained, as there is always a necessary felting of the fibers that cannot be prevented when wool is poled. In dyeing machines, where the wool is given only a slow motion in the dye bath, felting is seldom noticed. Rotary machines operating with a large volume of water always gives good results. Certain types of dyeing machines in which the wool remains stationary are ideal, but up to the present they have not been extensively introduced in mills on account of their apparent great cost. Such machines conserve to the utmost the wool and keep it in good condition for carding, combing, etc., as the operations of dyeing and washing are carried out without disturbing the stock.

For the dyestuffs of the groups above named, the dye liquor is made up to contain the following quantities of chemicals, calculated on the weight of the wool to be dyed: 2 to 3 per cent. acetic acid and 10 per cent. Glauber's salt. Commence dyeing at 120° F., raise in 1/2 hour to the boil and boil for 1/2 hour, and add from 1 to 3 per cent. oil of vitriol, according to the depth of shade to exhaust the bath. When exhausted, cool the bath by running in cold water, and add the previously dissolved bichrome. Continue boiling for 3/4 hour, finally wash well and dry. Acetic acid may be used instead of oil of vitriol to effect the bath exhaustion, but experience has demonstrated that where oil of vitriol has been used, the dyeings stand up much better when subjected to the official tests.

As government requirements are very exacting, contractors should carefully investigate every detail of the processes through which the dyed wool passes. It has been found by careful experiment that the stability of dyed colors is materially influenced in time by the character of oil used on the wool, and also on the time in which dyed and soiled wool has been stored before being processed. Some shades seem to weaken under the official tests when the trouble has been traced to the influence of the oil on the dye, and not to the sole action of the testing chemicals.

It is first mentioned that in the reign of Edward V, 3,000 merinos were obtained from Spain and imported into England, and about 100 years later Queen Mary of England, wife of Philip II of Spain, again imported 3,000 more merinos, which were distributed over the country to cross with the native English sheep.—From Australian Sheep and Wool.

THE PREIN FINISHING PROCESS FOR TEXTILES

Wochenberichte der Leipziger Monatschrift fuer Textil-Industrie

On February 11, 1914, E. A. Prein was adjudged guilty and sentenced by the Hannover Court to imprisonment for two years and a fine of 3,000 marks and the loss of rights as a citizen for three years. Prein in 1909 applied for a patent for a new process of weaving and finishing which it was claimed effected an important saving in the cost of weaving and gave the goods a much softer and more attractive handle. The German patent was issued the latter part of 1911 and the process was also patented in various foreign countries. Prein organized a company under the name of "Webstuh! Apparatbau I. P. Prein" and distributed a large number of copies of a financial prospectus of the company. This prospectus stated that the invention had been tested in practice and did not need further improvements. The annual license fees were estimated at 6,000,000 marks. The company was organized with a capital of 1,500,000 marks of which 900,000 marks consisted in the purchase price of the invention; the remaining 600,000 marks was to be sold to private investors. The prospectus brought immediate results. The shares were sold at a high price, so that Prein personally received 400,000 marks in premiums.

In the fall of 1912 the Prein-Gewebe Aktiengesellschaft was organized by five persons. Prein took 900 of the shares and his four associates each took 150 shares. The enterprise made no headway in the textile industry and was a complete failure. Two of the stockholders, who were retired army officers and had invested their savings in the Prein company, brought suit against Prein. The court decided that fraud had been proved since Prein had made false representations as to the value of the company's shares and thus sold the rights at excessively high prices in order that he might obtain the proceeds. The invention proved to be a failure from the start and the patent office had operated the loom only by hand. Later an attempt by Prein to work the process proved a failure as the drying apparatus was not sufficient. Further experiments after the suit had been brought also proved to be without result. The invention was without value. Prein had deceived the purchasers of the rights under the patent when he had represented the newly organized corporation to be highly profitable and that the process had been tested in practice. His enthusiasm as an inventor did not excuse him. Prein appealed from this decision, but the higher court decided against him. For technical reasons, however, the case was referred back to the lower court. [An article taken from the "Zeitschrift fuer die gesamte Textil-Industrie," describing the Prein process for weaving cloth in a damp state was published in our October, 1913, issue.]

A SPONGING AND SHRINKING MACHINE

The illustrations show a machine for sponging and shrinking cloth which has recently been patented in this country and is described by the inventor as follows: Cloth used for suits, overcoats and the like generally has to be moistened, or sponged. For this purpose devices have been used in shops that are quite expensive and not specially convenient. The tailors and dressmakers ordinarily are not able to perform this operation in a convenient and satisfactory manner with the devices now on the market, but usually send them to factories that have large and expensive sponging devices, or else have to take up considerable time in the operation. The principal object of this machine is to provide an efficient apparatus for sponging cloth in small shops and by custom tailors and dressmakers. A further object is to reduce the amount of steam consumed and to provide a construction by which the steam can be made by any convenient kind of a heater for the water, electric, gas, self-heater, coal, or any other kind. The machine can be operated by unskilled help without danger of damage to the cloth or to the apparatus.

Fig. 1 is a front elevation of the machine; Fig. 2, a central, vertical section.

The apparatus consists of two parts, a

steam producer and a device for sponging and shrinking the cloth.

The steam producer is of comparatively small size so that it can be applied to a stove or any other form of heater, but it can be made in large sizes for use in large shops and factories. It consists of an outer shell formed of sheet metal preferably and having a layer of wire fabric outside in which is embedded an insulating layer of asbestos or other non-conductor of heat. The bottom

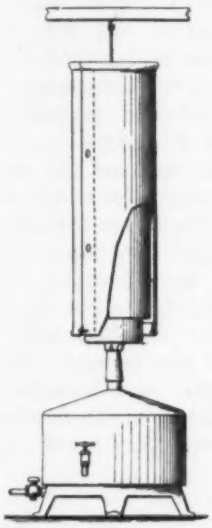


FIG. 1

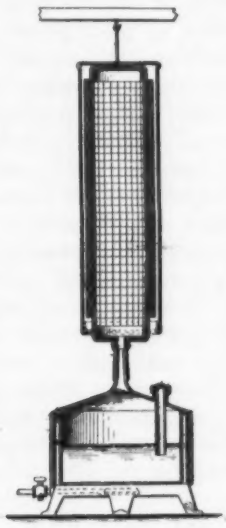


FIG. 2

of the outer receptacle rests on the heating device with which it is used. At the top it is provided with a central opening. Through this opening hangs a water can which has an upper flange by which it rests on the top of the receptacle and extends nearly to the bottom. It has a sloping top and a closure of an ordinary kind through which it can be filled with water. The top gradually converges to form a conical outlet.

The apparatus is set on a heater and a whistle at the top of the outlet warns the user when the steam has been generated. When sufficient steam has been generated the sponging apparatus is set on the steam generator. The apparatus comprises a cylindrical tube formed of wire fabric and covered with cloth. It has an inlet which fits the outlet and supports the sponging device. At the top the tube has an eye by which a flexible connection, as for example, a string, can be connected from it to the ceiling Over the outside of this tube is placed a jacket, which consists of a flat top resting on the top of the cylinder and formed of canvas. It is perforated at the center for the passage of the string. Surrounding this top is a wire ring and depending from that is a canvas cover which is open along one side. The sides of this opening overlap each other. At the bottom the canvas covering is provided with a wire having two hooks so that its ends can be connected. These hooks are located at the ends of the flap. This covering is of sufficient size to extend down around the walls of the cylinder and remain at a distance from them all around. It is open at the bottom, but when the bottom wire is closed the slit through its wall is practically closed.

AN IMPROVED HIGH PRESSURE BOILING JIGGER

From Oesterreich's Wollen und Leinen Industrie

The boiling and cleansing of heavy cotton goods preparatory to bleaching a uniform white with the goods free from wrinkles presents many difficulties. These preparatory processes cannot be properly carried on in an open jigger, while the cost becomes prohibitive when a plant for boiling and bleaching in the open width is installed. Many attempts have been made to remedy these difficulties and at last the Erckens & Brix Maschinenfabrik, Rheydt, Germany, L. H. A. Schwartz & Co., Boston, Mass., American agents, have perfected an apparatus which has proved entirely successful. It must be borne in mind that a much larger quantity of chemicals and steam is consumed in preparing and bleaching cloths in the open width than in the rope form. The effect of the bleaching and boiling processes is, therefore, much more favorable than when carried on in the old style open jigger.

The Erckens & Brix machine in perspective at Fig. 1, a cross section being shown at Fig. 2. The kier is made oval in order to accommodate the winding apparatus and

also to reduce the quantity of liquor as much as possible. The two winding rollers are driven by pulleys and friction couplings. The goods are reversed automatically by the operation of a plate which is fastened to the

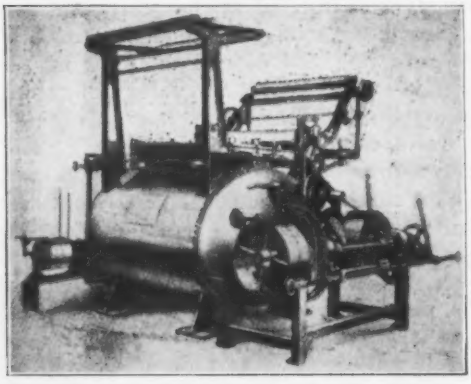


FIG. 1

leader of the cloth. A carrier roller is placed between the two winding rollers so as to guide the cloth.

Two levers are fastened to the shaft of the guide roller and connected by a plate

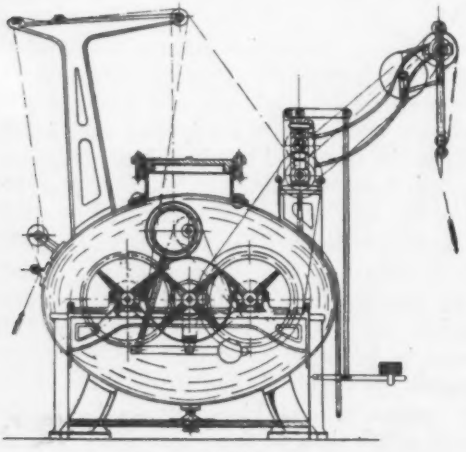


FIG. 2

As the plate which is fastened to the lever, approaches the plate on the guide roller connection is made with an eccentric which throws one friction coupling out of and the other into action. The distance between the winding rollers is such that a roll of cloth 36 inches in diameter can be easily wound. This is equal to about 3,300 yards of light goods. On account of the high efficiency of the machine the goods are boiled but a short time. When taken from the machine the cloth can be wound on a suitable press roll.

NATURAL DYES AS SUBSTITUTES FOR COAL TAR COLORS

BY CHROMIUM

(Continued from December.)

It is doubtful if the plant known as weld is now grown, but it was formerly cultivated in France, and when ready for use much resembled hemp. The yellow coloring matter it contained was difficult to dissolve, but when dyed at a vigorous boil it gave very fast yellows on wool and silk, the brightest of which was got on a tin mordant. Picric acid is made by acting upon carbolic acid (phenol) with strong nitric acid. It forms lemon yellow crystals which dissolve readily in water, and dyed wool or silk yellow from an acid bath. This in combination with indigo extract was formerly used to dye silk a bright green, but is now principally made for manufacturing explosives, the ammonia salts of which are highly destructive.

MADDER

This good old dye is reliable enough, but the artificial alizarines have knocked it out of cultivation, so that it is doubtful if any quantity is in existence, although some old fashioned dyers of drabs and modes still use a small amount for shading up purposes. Although Madder is strictly a mordant dye, if white wool is boiled in a bath of madder a reddish brown color is imparted to the wool, which is quite distinct from alizarine lake, and is generally thought to be impurities fixed by the salts of the water. The following list of colored lakes with which Madder gives with mordants, will be some guide to its use on wool. Chrome gives a brownish claret. Alumina, pink to scarlet. Iron, drab to purplish brown. Copper, drab to yellowish brown. Tin, brown orange. Zinc, reddish brown. Manganese, Nickel and Cobalt, dark browns. In the dyeing of cotton, Turkey red, the brown impurities seen when applied to wool are removed during the clearing.

COCHINEAL

This is quoted yet on the market, but the supplies will only be small, and the price will be against anything but the best quality of material being dyed with it. It forms, as is well known, the body of a dried insect, the "Coccus Cacti," feeding upon a cactus plant and native to Mexico. Fine brilliant scarlets may be dyed upon wool or silk by using tin crystals as a mordant for the bluer shades of scarlet, and stannic chloride (tin spirits) where a yellow fiery scarlet is wanted. White tarter must be used along with the mordant, or only thin shades will be got. The two following old recipes will give a rough idea of the application of cochineal to wool.

For 3 lbs. of wool give 1 pint tin solution, and 3/4 lbs. tartaric acid. Let this boil, skim the surface, then add 1/4 lbs. cochineal. Cool, enter the wool and boil for half an hour. This gives a solid pink. The tin solution is made by dissolving 5 lbs. tin in a mixture of 10 lbs. hydrochloric acid and 10 lbs. nitric acid.

For a fast cochineal crimson upon 10 lbs. of wool the following is given:

Boil the bath with 1/2 lb. tartar crystals, then add 1 lb. alum and 3/4 lb. tin solution. Mordant the wool in this for 30 minutes at the boil, then dye with 1 1/4 lbs. ammoniacal cochineal paste (cochineal ground and mixed with ammonia) and 1/4 lb. of tin solution.

A rose color on wool to stand fulling is dyed as follows:

For 110 lbs. of wool. Boil up 13 lbs. 2 ozs. alum, 5 1/2 lbs. tartar, 8 3/4 ozs. perchloride of tin (stannic chloride), 9 ozs. tin crystals, and 2 lbs. 3 ozs. cochineal. Cool, enter the goods, and dye for an hour at the boil. Lac-dye and the rest of the cochineal group will not be of much use, as the colors are weaker and less applicable to wool.

MINERAL COLORS ON COTTON

This is the smallest group of dyestuffs which is available for dyeing by precipitating inorganic salts directly upon the fiber. The list is complete when iron buff, manganese bistre, Prussian blue, chrome yellow and orange, and khaki is mentioned. Chrome yellow and orange are both beautiful brilliant colors which weight the cotton heavily, the only drawback being the poisonous nature of the lead salts. The yellow is dyed by padding through a bath of brown sugar of lead and litharge, then squeezing and giving a passage through lime water, followed by a passage through a bath of bichromate. If an amber tint is required lead nitrate is substituted for the common acetate, while the orange is dyed by producing a yellow first, and then taking the goods thrugh a hot and strong caustic soda lye. Iron buffs of a light shade are dyed by giving alternate baths of nitrate of iron and lime water, and darker ones are easily obtained by using weak tannin liquors. Bronze or bistre colors, which consist of a deep blackish ground, were formerly dyed by padding the goods in a bath of sulphate or chloride of manganese at about 80° Tw., then drying and padding twice through a first bath of soda lye at 24° Tw., and finally a second one at 12° Tw. These baths decompose the manganese salt upon the fiber into oxide of manganese, which is then converted into the brown peroxide by passing through a bath of chloride of lime at 2° Tw.

FAST CATECHU COLORS

These can be dyed equally as fast as the direct cotton dyes, and have the advantage of being heavier and free from risk of future mildew. Alternate baths of cutch or gambier dissolved in water, with a bath of boiling bichromate will give cutch browns of almost any shade, and they can be easily darkened by a passage through a bath of nitrate of iron. A cream color can be dyed on 11 lbs. of white cotton by boiling out 3/4 ounce of catechu in clear water, and dissolving 2 lbs. 3 ozs. curd soap in the clear liquid. The cotton is entered in this at 190° F. and is worked for an hour. Bright yellow tan shades, which are simple, fast and satisfactory, can be dyed upon cotton by mordanting with tannin, fixing this by a bath of tartar emetic, and then developing the dye by a passage through a salt of titanium. This latter is the most expensive item, but as the strength of the bath is only required to be about 1/2 per cent., this is not a big matter.

TESTING THE RESISTANCE TO WEAR OF CLOTH

From the Dyer and Calico Printer

So far the dynamometer has been relied upon solely for testing the strength of fabrics. The German military authorities, for example, have fixed standards of strength and elasticity, according to which they test the goods supplied to them by the contractor. It seems, however, that it is a mistake to apply to fabrics a test which is only suitable for yarns. This has been proved by the fact that goods passed by the authorities on the strength of this test have shown themselves defective in wear, especially in the case of the new field-grey uniform cloths. It is as well to state here that by "strength" is meant resistance to wear.

It is easy to show experimentally that the test is bad when applied to woven cloth. If, for example, a fabric is treated with dilute sulphuric acid, its strength and elasticity are both increased for the moment, but the fabric rapidly tenders in stock. The result of this has been that since about three years ago the German military authorities have refused to accept any cloth which shows either an acid or an alkaline reaction to test paper.

The now admitted shortcomings of the dynamometer test as applied to cloth have forced the German War Office to resort to other tests. Among these may be mentioned exposure of the fabric to revolving scraping rollers, which are intended to represent the effects of wear, only concentrating them within a shorter period. The first War Office to try this new test was the Dutch, who used emery rolls. The test was abandoned, however, as valueless. It was, nevertheless, adopted by the Swiss, who employed the Hasler machine with scraping knives, but the Hasler machine had to be given up, as its results gave very erroneous data as regards the durability of the cloth in wear.

Professor Kapff, of Aix la Chapelle, tried to improve the Hasler process, but without success. A. Kertess showed that one and the same cloth, according as to how it has been pressed—that is to say, according to the nature of its surface—gave very different results. This condemnation of the Hasler process has been amply confirmed. Arguing from these results, Kertess concluded that reliable data could be found if every cloth under test could be given the same surface. Hence, he tried to do this; but all his attempts with raising, pressing, and other means of surfacing, failed. Finally, however, it was found that chemical processes would give a constant surface. When the cloths were soaked first with hydrochloric acid and then with spirit of wine, so as to get rid of all the non-textile substances in the cloth, drying and pressing gave a surface which gave reliable results with the scraping machine. In the scraping test, the goods must always be compared with types of which the durability is known from actual experience. If the new goods stand the same number of revolutions of the scraping roller as the standard, the durability is the same as that of the standard, and so on.

The main difficulty is the selection of a proper type of scraping roll. The Hasler machine has the fatal defect that it has a striking as well as a scraping action. Various types of scraping roll have been tried, but there is no doubt that the best form is one with sharp-edged but shallow grooves. It may be mentioned that the rolls wear out very fast, more quickly, indeed, than the cloth.

So far, the new process, that is, chemical treatment with acid and spirit, followed by a passage through the scraping machine, has only been employed with heavy milled fabrics, such as are used for making military uniforms, but further investigations have made it probable that the method can be extended to much lighter goods. There was at first an idea that this chemical method would also afford assistance in determining the effect of various dyes and dyeing processes on the durability of the fibre, but these hopes have so far been disappointed.. The most that can be done so far is to form some probable estimate of the life in actual service of a fabric. There can be no doubt that the dyeing and all other treatments to which the cloth has been subjected are factors in the result, but it is as yet impossible to subdivide the result among them.

The new process has no particular theoretical standpoint, but the fact remains that its indications have been fully justified during the last two or three years by actual wear of the garments in ordinary military life. There seems, therefore, little doubt that, given a suitable scraping machine, and fabrics of exactly similar surface, the latter can be accurately compared as regards durability by the number of revolutions of the machine which they can stand.

FINISHING JUTE TWINE

BY GAUL

Translated from the French by the Editor of the Textile World Record.

Jute twine is made by twisting two or more ends of single jute yarn and then giving the ply yarn a light sizing with the object of improving the appearance of the twine and increasing the weight. The sizing composition varies widely. The following formula is one that I have used in a large mill in Western France:

Mixture 1

Starch	parts	8
Glucose		3½
Water		60
Total	parts	71½

The starch is placed in a large tub and the water added gradually, the starch being dissolved cold. The glucose is next added and the mixture is stirred and brought to a boil, the boiling continuing for twenty minutes. The second mixture is then made up as follows:

Mixture 2

Borax	parts	1½
Talc		2
Lithopone		3
Gelatine		3
Water		50
Total	parts	59½

This mixture is heated until the borax and gelatine are completely dissolved. The two mixtures, 1 and 2, are then combined, while stirring vigorously to prevent the formation of lumps, the whole being boiled for twenty minutes. When cool the solution is ready for use. If it is to be kept in stock for some time about 1 per cent. of salicylic acid is added as an antiseptic. The talc and lithopone serve to load the yarn. Lithopone is a mixture of sulphide of zinc and barium sulphate.

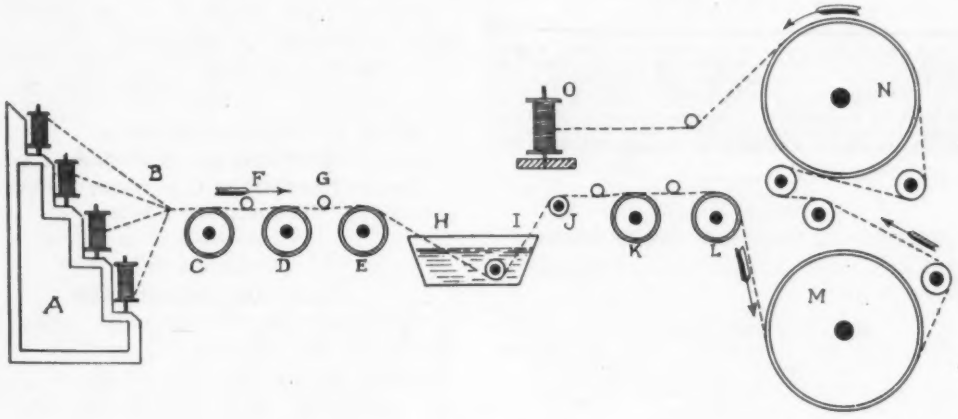


FIG. 1

The illustration, Fig. 1, shows the construction of the machine used for sizing and polishing the twine. The spools of unsized twine are set in the frame, A, the twine, B, being subjected to the action of the polishing rollers, C, D and E, which are covered with felt or cocoa fiber. The twine is held against the polishing rollers byadjusting the rods, F and G. The twine passes through the finishing mixture in the roller, I, in the tank, H, then over the rod, J, and subjected

to the action of the polishing rollers, K and L, which are similar to the first ones. The twine is then dried by contact with the hollow cylinders, M and N, heated in the interior, and is wound on the spools, O. The twine is wound from the spools, O, into balls ready for the trade.

INSPECTING COTTON GOODS

Editor Textile World Record:

What do you consider the best color for a background over which to pass finished white cotton cloth, such as voiles, lawns and dimities, when inspecting for damages, oil spots, grease, stains and defects in general? Inspector (2417)

The best inspecting machine would be one with a black background. These machines can be worked at any speed desired. They should be so placed that the light will fall on the cloth. Morocco.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 146

GREEN ON WORSTED DRESS GOODS

Green on worsted dress goods. Prepare the dye bath with

1 lb. 3⅕ ozs. Amazo Blue.
(American Dyewood Co., 80 Maiden Lane, New York City, N. Y.)
10⅖ ozs. Amazo Fast Yellow L R.
1⅗ ozs. Amazo Brill. Red 2B.
20 lbs. Glauber's Salt.
3 lbs. Oil of Vitriol.

Enter at 120° F., bring to boil and boil 1 hour. Rinse.

The above colors are recommended for their fastness to light and washing and for their good leveling qualities.

Recipe No. 147

BROWN ON WORSTED DRESS GOODS

Brown on 100 lbs. worsted dress goods. Prepare dye bath containing

7⅕ ozs. Amazo Blue.
(American Dyewood Co., 80 Maiden Lane, New York, N. Y.)
11⅕ ozs. Amazo Brill. Red 2B.
2 lbs. 12⅘ ozs. Amazo Yellow R.
20 lbs. Glauber's Salt.
3 lbs. Oil of Vitriol.

Enter at 120° F., bring to boil and boil 1 hour. Rinse.

The above colors are recommended for their fastness to light and washing and for their excellent level dyeing properties.

Recipe No. 148

ORANGE BROWN ON COTTON YARN

Triazol Fast Brown G on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Triazol Fast Brown G.
(Geisenheimer & Co., 189 Front St., New York, N. Y.)
20 lbs. Glauber's Salt.
3 lbs. Soda Ash.

Enter at 180° F. and dye at a boil for 1 hour.

Triazol Fast Brown G possesses very good fastness for a direct cotton color.

Recipe No. 149

BROWN ON COTTON YARN

Oxamine Light Brown G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Oxamine Light Brown G.
(Badische Co., 86 Federal St., Boston, Mass.)
20 lbs. Glauber's Salt (Crystal).

Enter at 180° F. and dye at a boil for 1 hour.

Oxamine Light Brown G possesses the general properties of the direct cotton colors.

Recipe No. 150

VIOLET ON COTTON YARN

Napthtamine Violet F B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Napthtamine Violet F B.
(Kalle Color & Chemical Co., 530 Canal St., New York, N. Y.)
30 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for three-quarters of an hour.

Napthtamine Violet F B possesses the general properties of the direct cotton colors.

Recipe No. 151

BLACK ON COTTON YARN

Zambesi Black O T A on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Zambesi Black O T A.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
30 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 180° F. and dye at a boil for one hour. Rinse and diazotize by working for one-half hour in a cold bath made up with

3 lbs. Nitrite of Soda.
6 lbs. Sulphuric Acid, 168° Tw.

Rinse and develop in another cold bath for one-half hour made up with

¾ lbs. Toluylene Diamine.
1¼ lbs. Soda Ash.

Zambesi Black O T A possesses good fastness in most respects.

Recipe No. 152

BLUE ON UNION CLOTH

Union Sky Blue 83408 on 100 lbs. cotton worsted union cloth. Prepare the dye bath with

2 lbs. Union Sky Blue 83408.
(Cassella Color Co., 182 Front St., New York, N. Y.)
30 lbs. Glauber's Salt.

Enter at 120° F., raise bath gradually to a boil and dye near boiling point for 3/4 of an hour. If the wool is then found to be insufficiently dyed, raise temperature to boil and boil another 15 or 20 minutes.

Union Sky Blue 83408 will be found to be an excellent color for producing even results on all kinds of union material.

Recipe No. 153

YELLOW ON COTTON YARN

Direct Yellow P R on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Direct Yellow P R.
(Innis Speiden & Co., 46 Cliff St., New York, N Y.)
20 lbs. Common Salt.

Enter yarn at 160° F., raise to a boil for 45 minutes. Lift, rinse and finish.

Direct Yellow P R possesses reasonable fastness, and will be found a very good color for union dyeing.

Recipe No. 154

BLUE ON COTTON YARN

Ciba Blue 2 B on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Ciba Blue 2 B.
(A. Klipstein & Co., 644 Greenwich St., New York, N. Y.)
8 lbs. Caustic Soda Solution, 66° Tw.
8 lbs. Sodium Hydrosulphite.

The dyestuff is made into a smooth paste with the necessary quantity of caustic soda and a little monopole soap or Turkey Red oil, over which a quantity of boiling water is poured. The required amount of sodium hydrosulphite is then added. After allowing to stand for a short time the solution of reduced dyestuff thus obtained is added to the dye bath to which a small amount of sodium hydrosulphite has already been added.

The yarn is dyed at a temperature of 140° F. for about one-half hour, then wrung, oxidized in the air, rinsed and soaped.

Ciba Blue G possesses in general very good fastness to light, alkalies, acid, mercerizing and cross dyeing.

Recipe No. 155

GREEN ON COTTON YARN

Naphtamine Dark Green B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Naphtamine Dark Green B.
(Kalle Color & Chemical Co., 530 Canal St., New York, N. Y.)
40 lbs. Glauber's Salt (Crystal).

Enter at 180° F. and dye at a boil for one hour.

Naphtamine Dark Green B possesses good coloring power, and in general the properties of the direct cotton colors.

Recipe No. 156

BROWN ON COTTON YARN

Benzoform Brown V L on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Benzoform Brown V L.
(The Bayer Co., 117 Hudson St., New York, N. Y.)
40 lbs. Glauber's Salt (Crystal).
2 lbs. Soda Ash.

Enter at 180° F., dye at a boil for one hour, rinse and then after treat in a bath made up with

2 lbs. Formaldahyde

working for 30 minutes at 140° F.

Benzoform Brown V L when dyed in this way possesses very good fastness to washing.

Recipe No. 157

WOOD COLOR ON WORSTED YARN

Lemon Flavine on 100 lbs. worsted yarn. First mordant the yarn with

2 lbs. Potassium Bichromate.
(A. Klipstein & Co., 644 Greenwich St., New York, N. Y.)
2 lbs. Cream of Tartar.

Entering at 120° F., bringing slowly to a boil and boiling for not less than one and one-fourth hours. Then dye in a bath made up with

1 lb. Lemon Flavine.

Entering at 120° F. and dyeing at a boil for not less than one and one-fourth hours.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Skein Dyeing Machine. The Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y., and Huddersfield, England, have recently placed on the market an improved skein dyeing machine which is described in another part of this issue.

A High Pressure Boiling Jigger. Erckens & Brix Maschinenfabrik, Rheydt, Germany, L. H. A. Schwartz & Co., selling agents, Boston, Mass. An improved apparatus for boiling and preparing cotton cloth for the bleaching process. A description appears in this issue.

Washing and Bleaching. The Chemischen Werken, vorm. Dr. Heinrich Byk, Lehnitz, Nordbahn, Germany. An improved method of washing and bleaching cotton by the use of permanganates.

Oxydizing Apparatus. The Elton Cop Dyeing Co., Bury, Eng. An improved apparatus for oxydizing yarn on cops in the dyeing process.

Stop Motion for Spinning Machines. Walter Schultze, Muenchen, Gladbach, Germany. A stop motion for preventing single ends of roving from running on spinning machines.

Bleaching with Ozone. Emil Gminger, Reutlingen, Germany. An apparatus for bleaching textile fibers with ozone, which is said to give good results.

Needle for Ribbers. Schubert & Salzer, Chemnitz, Germany. An improved needle for rib knitting machines.

Waste Cleaning Machine. The Spinnereimaschinen-Fabrik Seydel & Co., Bielefeld, Germany. An improved machine for cleaning card waste and similar materials.

Lap Winder for Cards. Saechsische Maschinenfabrik Rich. Hartmann, Chemnitz, Germany. An automatic lap winder apparatus for cards.

Winding Machine. Maschinenfabrik Schweiter, Horgen, Switzerland. An attachment for cop winding machines by which the greatest strain is placed on the yarn when winding at the point than at other parts of the bobbin.

Paper Yarn. Ersten Oesterreichischen Jute-Spinnerei and Weberei, Vienna, Austria. A machine for the manufacture of paper yarn. A moistening device is connected with the delivery rolls.

Spool Rack for Warpers. W. Schlafhorst & Co., M. Gladbach, Germany. An improved spool rack for warpers in which the spools are so arranged that each thread is easily accessible and breakages are quickly discovered.

Grinder for Bur Cylinder and Licker-in. Dronsfield Bros., Ltd., Oldham, England, have recently adopted improvements in their machine for grinding the licker-in and bur cylinder. The improvement consists of a device for reclothing or remounting new wire when the licker-in wire has become badly worn or damaged.

Guards for Speed Frames. Asa Lees & Co., Ltd., Oldham, England, have placed guards of an improved model in front of their speed frames to prevent accidents to the operatives.

Filling Winder. Taylor, Lang & Co., Stalybridge, England. An improved pirn winding frame which, it is claimed, gives an increased production and does better work than has heretofore been possible.

A NEW KLAUDER-WELDON SKEIN DYEING MACHINE

The Klauder-Weldon Dyeing Machine Company of Amsterdam, N. Y., and Huddersfield, England, have recently placed on the market a new skein dyeing, bleaching and scouring machine. This machine is built on the well known Klauder-Weldon rotary principle to handle cotton, mercerized cotton, woolen, worsted, silk, artificial silk skeins and slubbing dyeing.

THE SINGLE SKEIN DYEING MACHINE COMPLETE

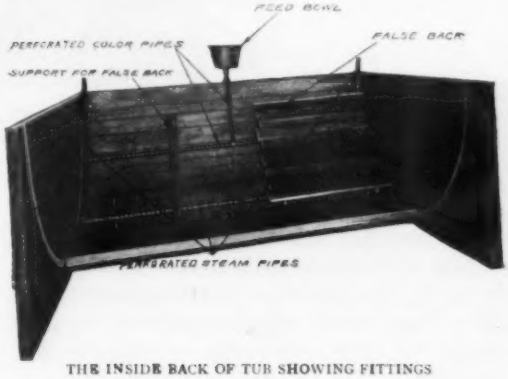
It is built in single style sizes to dye from 25 to 300 pounds per batch; and in double style sizes to dye from 300 to 1,000 pounds per batch. The Klauder-Weldon Company originated successful skein dyeing machinery and since that time their rotary skein machine has come into universal use throughout the world, for dyeing, bleaching and scouring. It has been a great labor saver, besides effecting an important economy in dyestuffs, steam and water. The great feature of these machines has been the fact that the skeins come from the machine perfectly smooth, straight, evenly dyed, and absolutely free from tangling and felting.

The Klauder-Weldon Dyeing Machine Company claim that, though many attempts have been made, no machine has been developed that could compete with theirs until the machine described in this article was brought out by themselves. This new machine is now being delivered to the trade after a test for many months in actual operation, and has made obsolete the machine heretofore furnished. It is built under the following U. S. letters patent:

645698—March 20th, 1900.
659906—October 16th, 1900.
999304—August 1st, 1911.
1057635—April 1st, 1913.
1120643—December 8th, 1914.
1120644—December 8th, 1914.
1120645—December 8th, 1914.
1120646—December 8th, 1914.
1120647—December 8th, 1914.
1120899—December 15th, 1914.
1121064—December 15th, 1914.
Other patents pending.

The cuts shown are of a 40 stick double worsted skein dyeing machine brought out to take the place of the old 42 stick machine. A comparison of these two machines will quickly demonstrate the superiority of the new machine.

An increase of 20 per cent. in the capacity of the machine is made possible by the fact that the new working parts are so constructed as to be all within the segments or on the outside, allowing the shortening of the guard posts enough to add seven inches of yarn bearing capacity to each stick. Sticks of new style machines will fit any new style machine instead of having different



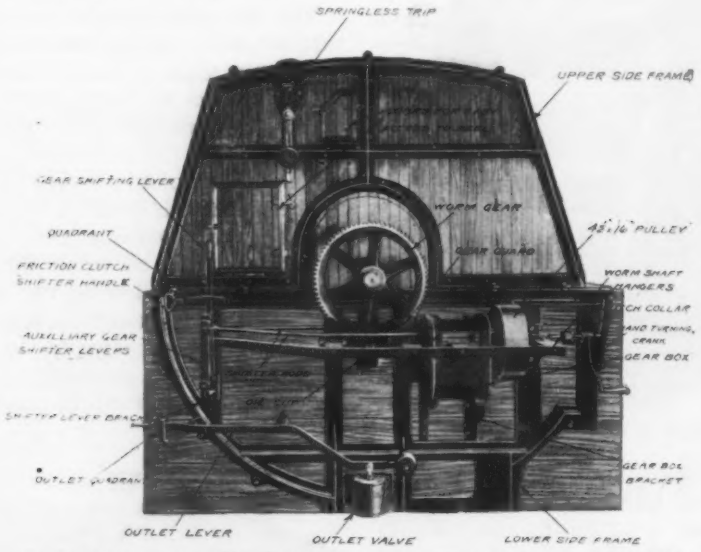
THE INSIDE BACK OF TUB SHOWING FITTINGS

length sticks for different size machines as heretofore. The standard sticks have 48 inches of yarn bearing space or 12 1/2 inches more than on the old 42 stick machines. The round ends are all 1 5/8 diameter as compared with 1 1/16 inch on the round and 1 3/16 on the square sticks of the old type. Owing to the new operation of parts, the saving of time in loading and unloading the

machine more than offsets the extra time required to handle the increase in material.

By the new construction labor is saved, while upkeep is reduced to a minimum by avoiding the use of small parts and by heavier construction. The circulation of the liquor through the goods is improved by the increased distance between the cup centres on the inner ring.

Gravity dogs are used on the new machine and eliminate 42 spiral springs used on the 42 stick machine. Cups with pivoted covers controlled by spiral springs are also



A SIDE VIEW OF THE SKEIN DYEING MACHINE, SHOWING DRIVE, OUTLET AND TRIP

wheel pinned on as compared with the old style of round stem with star wheel screwed on. This method overcomes the danger of breaking the star wheel or stem, which would spoil the ratchet cup and was apt to happen on the old style device. The star wheel used is of much heavier construction. The spiders have T head arms which prevent the trouble that sometimes arose from the segments springing or working loose. The inner rings, when adjusted, are held in position by a hand screw in place of a bolt, spring and chain.

eliminated, thus avoiding the use of 84 springs or 126 in all on the new machine. The cups that take the round end of the square stick are formed in the segment and have a sliding cover, one spring controlling the covers for all cups in a segment, so that there are only five large springs on this machine.

The sticks are held in the cups in the inner rings by a sliding cover, operated by a lever, that locks all sticks in position at once. The ratchet cups on the new machine set in the segment are almost flush on the inner side and have 1 11/16-inch bearing with a diameter of 2 9/16 inches as against a 1 7/8-inch bearing with diameter of 13/16 inch on the old cup. The stem is square with the star

The machines now have a friction clutch drive with three speeds forward and one reverse. The gears are encased, running in oil and are noiseless. This drive takes the place of two shafts with four cast gears running exposed and giving only two speeds.

Another new feature connected with this drive is the hand turning device by means of which the reel can be revolved if necessary.

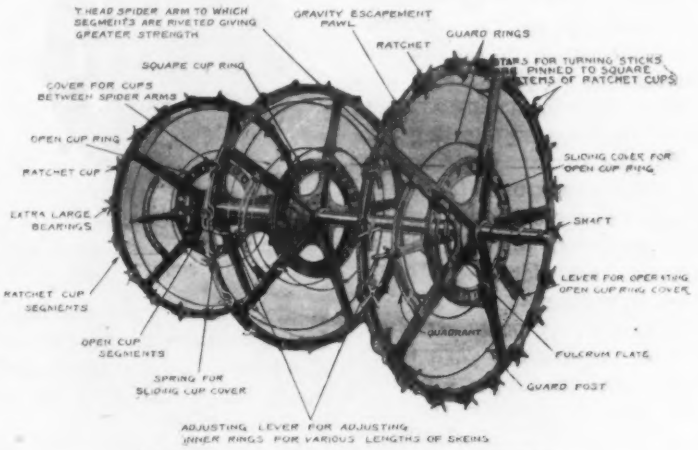
The new tripping device consists of an inside lever, which turns the sticks, and an outside lever held in vertical position by a weight, the whole being mounted on a shaft which is free to turn in a bearing. The principle features of this trip are ease of adjustment and the doing away with all springs. If a stick fails to turn, the trip

rings an alarm bell and readjusts itself in time for turning the next stick.

The outlet to the new machine is opened simply by the pressure of the foot on a lever at the front of machine and held open by a lever quadrant specially designed for the pur pose. When closing the outlet the lever is released by foot pressure and the valve is closed by a balancing weight. These outlets are made of large capacity, draining the tubs quickly, so as to save all the time possible. All the tubs are made with round bottom which reduces the liquor capacity, besides doing away with the danger of leaking.

means of a perforated pipe, located behind the false back, above the steam pipe. The location of the steam and liquor pipes insures equal distribution of the dye and a perfect circulation of the dye bath without such agitation as to mat or tangle the yarn.

The friction clutch drive is located on the side of the tub and is of the enclosed gear type, permitting of three speeds, forward and one reverse. It is operated by levers located at front of machine and can be built either straight or angle for belt or motor drive. In connection with this drive is a device for turning the reel by hand. The reel consists


T HEAD SPIDER ARM TO WHICH SEGMENTS ARE RIVETED GIVING GREATER STRENGTH
GRAVITY ESCAPEMENT PAWL
GUARD RINGS
RATCHET
STARS FOR TURNING STICKS PINNED TO SQUARE STEMS OF RATCHET CUPS
SQUARE CUP RING
COVER FOR CUPS BETWEEN SPIDER ARMS
OPEN CUP RING
RATCHET CUP
SLIDING COVER FOR OPEN CUP RING
EXTRA LARGE BEARINGS
SHAFT
LEVER FOR OPERATING OPEN CUP RING COVER
RATCHET CUP SEGMENTS
QUADRANT
OPEN CUP SEGMENTS
FULCRUM PLATE
SPRING FOR SLIDING CUP COVER
GUARD POST
ADJUSTING LEVER FOR ADJUSTING INNER RINGS FOR VARIOUS LENGTHS OF SKEINS

THE NEW STYLE DOUBLE 40 STICK REEL DETAILED

The tub is built of specially selected three-inch Georgia pine staves. The side staves are held together by bolts running from top to bottom and set in cast iron frames. There is a dado on the inside into which the cross staves fit. These staves are held in place by rods extending through the sides, across the tub and by bands drawn around the bottom and through staves at the top, front and back. The tub is emptied by a lever valve on the side of tub, flush with the bottom or in the bottom, operated by a lever at the front of the machine. A perforated steam pipe extends across the bottom at the back of the tub behind a false back which prevents steam from coming in direct contact with the yarn. Dyestuff is introduced from a feed bowl at the back of the tub by

of a metal shaft set in bearings on the tub sides. On this shaft are keyed metal spiders, the outer circles of the reel which carry the cups for the square sticks, are formed by metal segments riveted to the T head spider arms. After the square end of the stick is placed in the cup on one segment, the round end of the stick slides into the cup on the other segment and is held in place by a novel sliding cover arrangement. The cup that receives the square end of the stick has a square stem which projects outside the segment and a ratchet and star wheel is pinned.

A trip located at the side, near the top, consists of an arm with a roller at the point of contact, which extends through the side and engages the stars, causing each stick to make a quarter turn at each revolution of

the reel, when the yarn hangs free on the square stick. This device overcomes all danger of stick marked yarn and every part of the skein receives the same treatment by the dye bath. When a stick fails to turn, the trip, which is controlled by a weight device, is released and a bell attached to it signals the trouble. The trip readjusts itself to turn the next stick, preventing the machine from running without the sticks being turned as well as avoiding all danger of breaking the star wheels or ratchet cup stem. When the machine is reversed the trip is automatically disengaged. The cups for the inner round sticks are located on rings, movably attached to the spiders. These rings are built single or double for dyeing different lengths of skeins and are fitted with an adjusting device having a range of several inches. The cups on one ring are open. The end of the stick is put through this first, then is drawn back until the other end of the stick goes in the solid cup on the other ring. The sticks are locked in by a sliding cover on the back side of the open cup ring operated by a lever.

Guard rods supported by posts attached to the spider arms prevent the yarn from coming in contact with metal parts of the reel. All sticks are of specially selected maple or cypress with metal ferrules on both ends. The top of the machine is of one inch matched cypress, supported by cast iron side frames which are bolted to the lower side frames and by rods extending across the top through the side frames. Doors in the side permit of sampling or inspection without rolling up the canvas curtains which closed the front and back to confine the steam.

The metals used in the construction of the machine are iron, bronze, monel metal or German silver, according to the dyeing processes to be used. The tubs can be lined with copper or lead.

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The Swiss importation of raw cotton in 1913 amounted to almost $11,000,000, of which somewhat over one-half came from the United States, the rest from Egypt, and in small quantities, from British India.

THE INTERNATIONAL TIME RECORDER

The illustrations show the new International Dey register—fully automatic—and The International card time recorder manufactured by the International Time Recording Co., of New York, Endicott, N. Y. The value of time recorders in establishments employing a large or even a small number of operatives is generally recognized and the International has been designed to give absolute reliability in making records. The International machines are used not only for day hands, but are advantageously used for operatives working by the piece, especially in textile mills.

FIG. 1

FIG. 2

The machine prints the time of the late arrivals and early quitters in red, these red figures standing against the employe and acting as a warning, pointing out his own deficiencies and enabling him to correct them. They also show the superintendents who the habitually late comers and early leavers are.

The new International Dey register—fully automatic—shown at Fig. 1, registers the regular time in green and the irregular time in red. The weekly dial sheet is in the form of a payroll ledger sheet and serves every purpose of a regular payroll ledger. The help can be paid directly from the mechanically recorded time without rewriting into books. This results in an important economy in clerical labor.

The International card time recorder, shown at Fig. 2, records the regular time in blue and the irregular time in red. It gives

an absolutely accurate mechanically-made record of each employe.

This system of keeping the employe's time and using the record for the payroll has been adopted by several large textile mills with very satisfactory results. It is especially valuable in the case of piece-workers in enabling executives to compare the mechanical recorded time of the piece-worker with the normal capacity of the machine for that time. Since the introduction of time recorders in some textile mills, executives have come to a realization that frequently, under old conditions, the wages paid to a piece-worker could not have been correct, because the mechanically recorded time has shown that it would not have been possible for the operative to turn out the yardage claimed in the time he was actually reported present by the overseer. We are informed that International Time Recording Co. of New York will be glad to discuss the time-keeping question with textile executives and others interested in increasing efficiency and production.

THE NEW LANCASHIRE CLOTH WINDER

The Parks & Woolson Machine Co., Springfield, Vt., have attempted in this machine to cover the entire marketing needs in the fundamental operation of winding cotton, woolen and silk fabrics with all its various specialties except trade marking and yard numbering. These two processes are embodied in another model which is also built by this company.

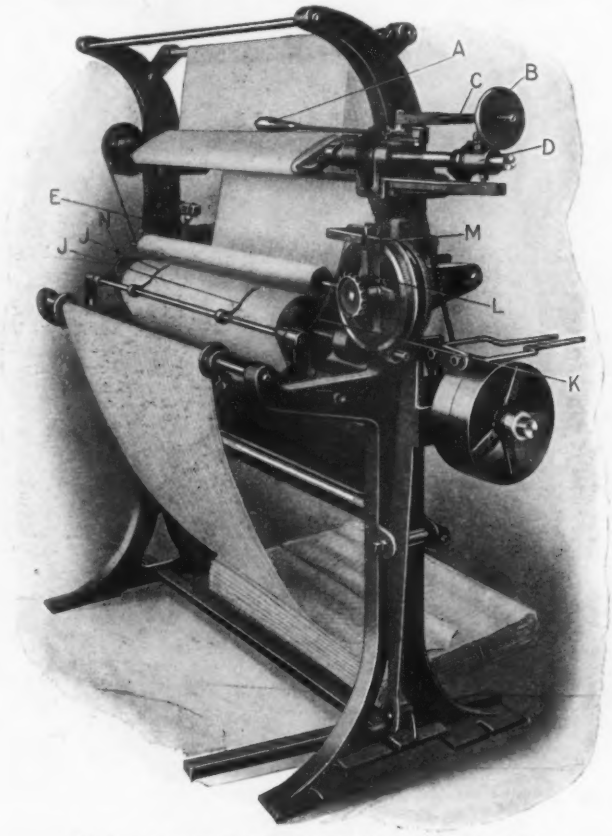


FIG. 1. A MACHINE ESPECIALLY ADAPTED FOR WOOLENS

A new and desirable feature in this winder is the quadrating dial that records the yardage length of the cloth being wound. A pin

on the dial may be instantly set at predetermined points when changing from one kind of cloth to another. This is only used when there is a considerable difference in the weight, thickness or elasticity of the goods.

A piece of cheese cloth can be followed with a cut of chinchilla and then a ladies' cloth, letting the pieces come haphazard without delaying operation of machine and all with precision measuring. Ordinarily this attachment is not used and its presence hinders not at all. When for any reason a readjustment of the measurer is to be made it can be done quickly and reliably. There is no resanding of rolls, readjustment of expansible pulleys or drums. It is positive so there can be no slip. Patents are applied for.

Another strong point is the quick acting board grip. The lever, A, grips the board when thrown to left and releases when reversed. The hand nut, B, adjusts for various lengths of boards. These movements are so handy that different board lengths can be run indiscriminately without delay. It is also self relieving after notching board

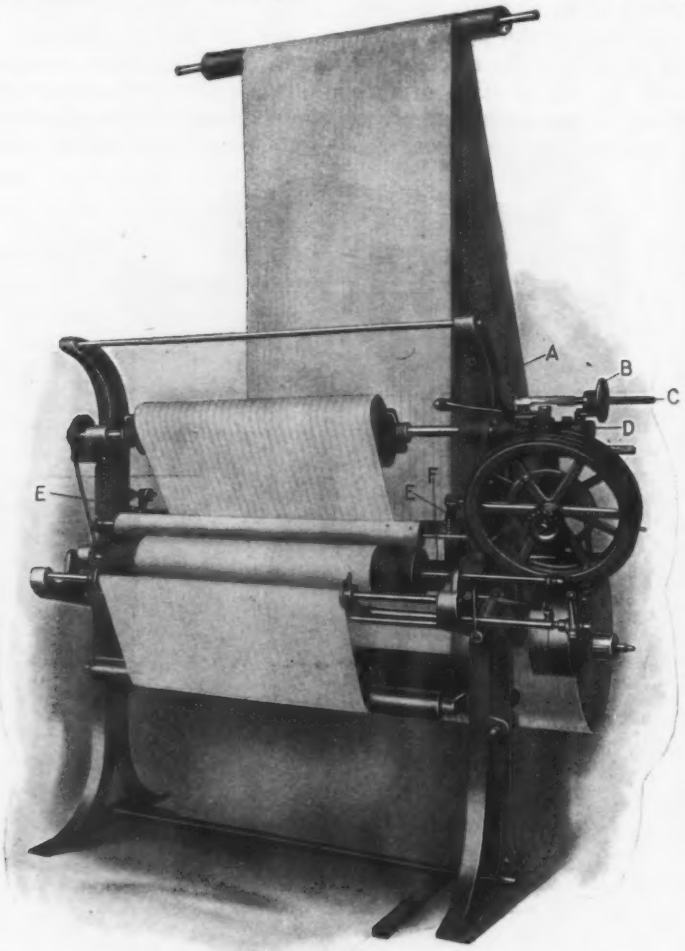


FIG. 2. A MACHINE DESIGNED FOR INSPECTING BOTH FACES OF COTTON AND AUTOMATICALLY WINDING INTO PACKAGES

against slipping from jaw slots so it will not split boards or thrust too heavily on shaft bearings.

The threading of the machine is extremely simple, all from the front without moving from position. The winder is driven by silent running chain; a spring equalizer neutralizes the jerk of winding on wide boards. The driving belt is shifted by foot lever, leaving the hands free for guiding the cloth and starting and finishing the package.

Figure 1 shows a machine especially adapted for woolens with 9-inch quadrating dial. It has automatic stop to measurer operated when tail end of cloth leaves measuring roll used when rethreading for each piece of cloth.

Figure 2 is designed for inspecting both faces of cottons, cutting out damages and automatically winding into packages of predetermined yardages all in one operation. Damages are cut out at a point just under the package being wound. When damage reaches this point, the operator touches trigger and the power is automatically thrown out and brake applied; the lever disconnects measurer and locks dial; the damage is cut out to any length without affecting measurement; measurer is then thrown in, new end started on package and winding resumed. This machine has 16-inch quadrating dial. When a chosen yardage has been wound in, machine automatically stops and cloth is cut off at same point as for damages.

FIG. 3. A MACHINE WINDING DIRECT FROM A PACKAGE HELD IN FRONT

Figure 3 illustrates a machine winding direct from a package held in front. The unwinding device is power driven with an automatic throw-in to prevent pulling on dead center.

Figure 4 is a motor driven machine for silks. Provision for winding in tissue paper is made when wanted.

The price on the machine has been made attractive to manufacturers. The base machine without extras cost considerably less than one fitted with various attachments. A wide variety of special features are available, all of them designed for practical and useful purposes.

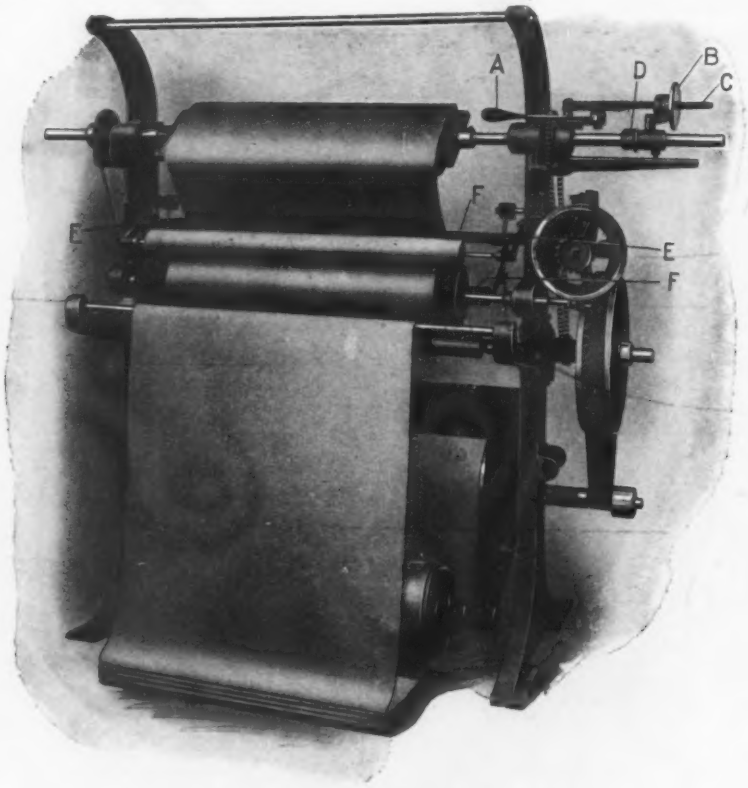


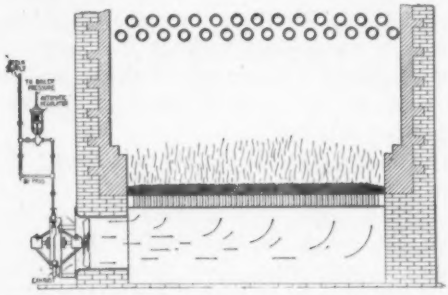
FIG. 4. A MOTOR DRIVEN MACHINE FOR SILKS

During the month of August, 1914, there was 1,982,324 lbs. of raw silk imported into the United States valued at $7,400,695, as compared with 2,135,603 lbs. valued at $6,816,944 imported in August, 1913.

MORE WORK FROM THE SAME EQUIPMENT

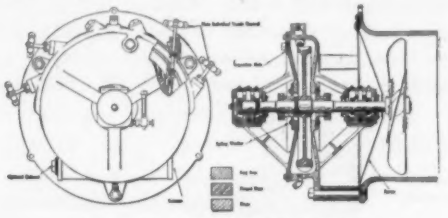
The turbo-undergrate blower has come into very prominent use recently in plants where the chimney draft is insufficient. It makes high rates of combustion possible, thereby often increasing the horse power of the boilers from 20 to 100 per cent. Additional advantages are that cheaper grades of coal can be burned successfully, often resulting in large fuel saving, that a peak load or emergency call can be carried quite easily without extra boiler capacity. It thus often saves the installation of new boilers. These little induced draft sets are set in the boiler brick-work and can be installed overnight. The B. F. Sturtevant Company, Hyde Park, Mass., have just completed a new design blower which has a great many mechanical advantages over any machine which has hitherto appeared. In this particular set the

turbine is very high grade. It is almost identical with the large standard Sturtevant turbines, and substantial bearings are provided with oil-ring lubrication. It is impossible for steam to get into the bearings.



VERTICAL SECTION THROUGH BOILER SHOWING HOW THE TURBO-UNDERGRATE BLOWER IS INSTALLED

The oil reservoir, when once filled, will last for weeks. Oil or grease cups are not apt to give as great satisfaction as this type of bearing. The injection of oil every day is apt to carry considerable dirt and the lubricating passages get blocked. Like the other design of Sturtevant undergrate blowers, this machine has no ball bearings. With them the



THE TURBO-UNDERGRATE BLOWER

heat from the steam is apt to dry out the lubrication and the balls crack and break. There is also a floating metallic stuffing box, which prevents steam from getting into the bearings, and enables a back pressure of 15 pounds to be carried. The casing has been made very large. This eliminates back pressure and tends to lower steam consumption. The new machine has ideal nozzle control, there being from one to six nozzles, according to the amount of steam required. The fireman can shut off any number of nozzles, thus obtaining high efficiency and minimum steam consumption at low loads. The sets are manufactured with fans of 14, 18, 22 and 26 inches.

WATERPROOF WOOD SOLE SHOES FOR THE DYE HOUSE

The illustration shows the waterproof wood sole shoe made by William Brown Sons, Camden, N. J., for use by workmen employed in dyehouses, bleacheries, wool washeries and other rooms where the feet are exposed to contact with water and chemical solutions. The Brown shoe is built for protection, durability and comfort. The manufacturers believe that it is the cheapest and best wood shoe on the market.

It is made with heavy plump uppers, with solid sole leather counters, buckles and brass toe tips. It is absolutely waterproof,

A WATERPROOF WOODEN SOLE SHOE

the upper being fastened to the wood sole in such a way that the water cannot penetrate to the inside. The soles are made of carefully selected and well seasoned hard wood, shaped by special machinery to conform to the lines of the foot. The uppers are made of heavy split leather, stitched and riveted together with the best linen thread by expert workmen. The shoes are made with or without iron on the bottoms, but the manufacturers recommend Style 100, which is fitted with irons, as the extra cost is very small and the advantages important.

Woolen and cotton stockings were first made at Leicester in 1810.

The cotton mills at Shanghai, China, are producing annually about 1,425,000 pieces of cotton cloth of 40 yards each, or a total of 57,000,000 yards. The cotton mills in Shanghai operate nearly 1,000,000 spindles and 4,755 looms, the former turning out from 500,000 to 800,000 bales of yarn of 400 pounds each, and the latter 1,426,500 40-yard pieces of cotton cloth per year.

A BIAS KNITTED FABRIC

A knit fabric especially designed for neckwear has recently been patented in this country and is shown in the accompanying illustrations, Figs. 1 and 2. The fabric is knitted flat on what is known as a flat knitting machine by racking or shogging, placing the fabric under a differential tension, so that one portion or side of the fabric will be under greater tension than another portion. Greater tension will be given to the fabric along one side than is given along the other, thus preventing the stitches or loops at one side from interfering with one another by

FIG. 2

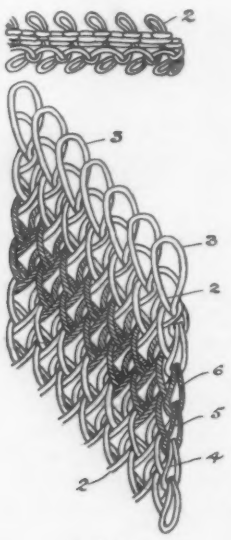


FIG. 1

reason of their looseness. The greatest tension is on that side where the loops would otherwise be loose and thus prevent the loops from backing up on the needles and interfering with the operation of the machine. A fabric, 2, is thus knitted on the bias; the thread loops, 3, run and unravel on the bias, although the fabric is apparently made up of wales, 4, which have the appearance of running vertically, and thread courses, 5, having the appearance of running horizontally across the fabric.

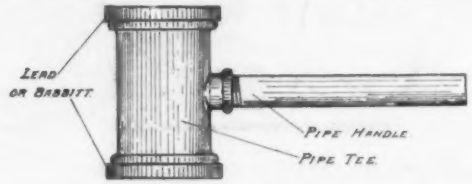
By feeding at desired intervals a thread of a different or contrasting color or colors, the knitted fabric is provided with a stripe, 6, of a contrasting color or on a substantially true bias. The bias knitted fabric may have a stripe of a different color from the body of the fabric itself, and the stripe is also located on a bias. These stripes during the knitting are apparently parallel and horizontal across the work, but when the work is removed from the machine the stripes are on a bias. This is accomplished without the necessity of stretching the fabric out of shape, so that there is no tendency to curl or become drawn out of shape.

The fabric has all the threads under the same tension on both sides. This is true of the thread loops forming the stripes so that when the fabric is furnished with knitted stripes, these stripes have substantially the same appearance on both sides of the fabric and have the same continuous or solid colors on both sides, so that the loops are not flowing or loose on one side, and tight on the other. In consequence the fabric could be used the wrongside out if desired.

A HOME MADE SOFT HAMMER

BY MILL MACHINIST

I herewith illustrate a very simple method of making a soft-faced hammer for general use in making drive fits of delicate parts that are liable to become scratched or battered should a hard hammer be used. Take a



A SOFT FACED HAMMER

common Tee pipe fitting and a piece of pipe of corresponding diameter as indicated in the sketch and make as big a hammer as desired. The mould for pouring lead or babbitt metal into the Tee is so easily made it requires no explanation. Be sure that the lead projects beyond the edges as indicated, after the cast has been made. After the faces are badly battered, it is a simple matter to throw the whole hammer into the melting pot, melt out the lead and re-cast. I have used a hammer like this for many years and know of none as good for good hard work, and I know of no simpler soft-faced hammer.

A PASSEMENTERIE MILL

From Uhlands Technische Rundschau

Translated from the German by the Editor of the Textile World Record

The passementerie trade, which depends so largely on taste and style, has had many difficulties to overcome before reaching its present important position. A very important section of the industry is the merchandizing department, whereas in former times the manufacturing end played the chief role. In consequence of this change in the organization of the business, the equipment of a passementerie factory has assumed a new form, a special feature of which is the arrangement of the rooms to facilitate the transportation of the materials in process.

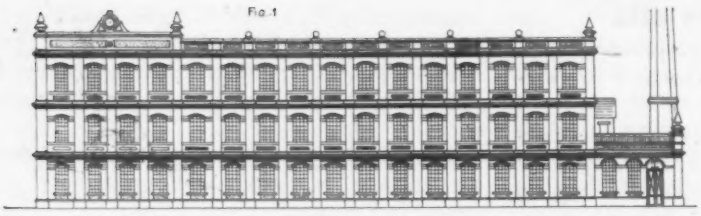
The accompanying plans show a modern plant for the manufacture of passementerie, including a department for embroidery. The passementeries section includes a division for room furnishings, gold and hand passementerie and for galloon manufacture. The different departments are located in a three-story building, the exterior of which is shown at Figs. 1 and 2. The buildings are all fireproof construction throughout, including the floors and ceilings, which are of cement and iron with a wood covering for the floors. The floors are supported by outside walls and steel posts, the spaces between the latter being 13 feet in each direction. The roof is made of wood and cement surrounded on all sides by a balustrade.

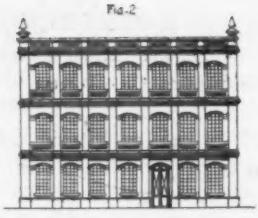
The passageway, A, by which entrance to the mill is obtained at the left side is used mainly for customers and officials. The operatives enter at the back part of the building, through the passageway, I, to the first floor; a stairway, K, leads to the upper stories. Next to the passageway, A, is the office, B, for the mill managers, also the counting rooms, C and D. On the other side is the wardrobe, E, and a passageway, F, in which is located a telephone booth. The room, G, is used for storage, and there is a sample room, G, where the goods can be shown to the customers. Both of these rooms, G and H, may be used for storage, if desired. The middle section of this floor has a passageway, P, by which access is obtained to a room in which an electric elevator, O, is located for carrying partly manufactured and finished products from one floor to another.

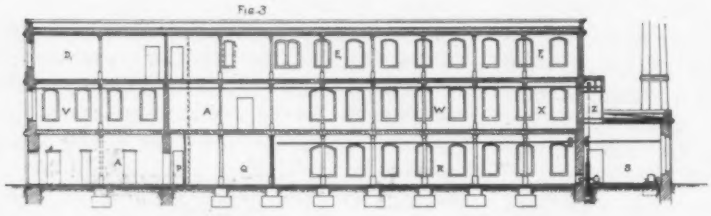
The room, Q, 26 ft. by 26 ft., is used for the storage of yarn. The gold tinsel is stored in a separate room. From the room, N, a door leads to the workroom, R, in which are four groups of passementerie and braiding machines. Two groups, a and b, consist of three-section passementerie machines, which can be used for passementerie for room decorations. One group includes machines for livery and carriage trimmings. Part of these are adapted for needle work, that is, for producing nubbed and boucle effects. Another group includes machines for gold lace. There are a number of upright machines for hand work in order to fill small orders quickly. The groups, c and d, consist of braiding and bobbin machines for the manufacture of soutache, presidents, cords, lace cords, etc. Artificial silk is used almost exclusively on these machines.

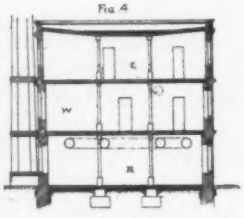
Power for driving the passementerie machines is obtained from four transmission cables running from the engine pulley through a beltway to pulleys in the different workrooms. The power house, S, and boiler room, T, along with the beltway, Z, are in an annex at the corner of which is located the chimney, U^1. In the power house is a 50 h. p. steam engine. The dynamos are driven from the counter shaft connected with the main shaft in the power house. There are two boilers each with a heating surface of 378 square feet. One of the boilers serves for heating the building and as a reserve.

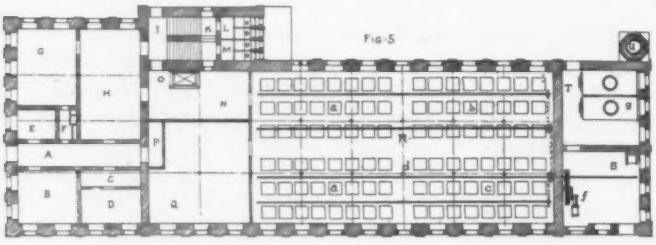
The stairway, K^1, is on the second floor, a plan of which is shown at Fig. 6. Adjoining the stairway are the boiler rooms, M and L and M^1 and L^1. The stairway leads to an ante-room on the second floor, at the end of which is the elevator, O. Adjoining it is the sample room U. As all partitions are in large part of glass, the overseer, seated on an elevated chair in his room, can see all parts of the workrooms, A^1, W, X and Y.

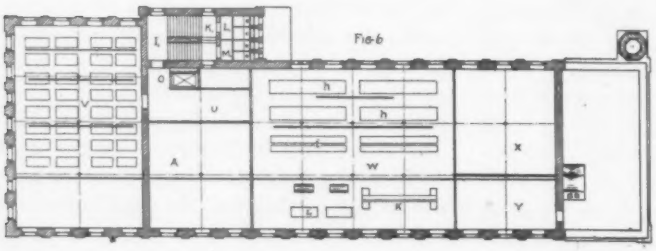


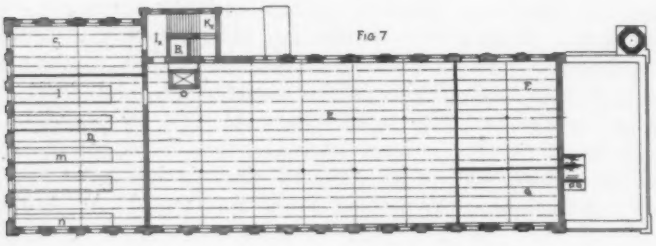


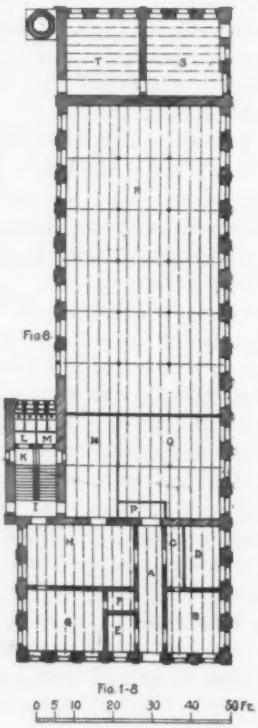












A PASSEMENTERIE MILL

The room, A^1, is used for the storage of raw materials, intended for the machines on the upper floors.

The galloon department, V, has 32 power machines with special attachments for the production of edging and dress trimming, millinery galloon, chenille trimmings and similar silk products. A great variety of goods are manufactured here, including mohair imitations of astrakhan. The adjoining room is used for storing the large number of machine parts when not required for special work. The large work room, W, is used for the preparatory machines, including spoolers, h, the yarn covering machines, i, and the chenille machines, k and i^1. The last named can be equipped for two systems of work. The machine, k, is 20 feet long. The machine, i^1, winds the chenille on spoolers, imparting the desired twist and tension. The workroom, X, is used as a storage for gold tinsel and has an apparatus in a separate part for gilding and gold plating. Adjoining this room is the room, Y, which is used for the storage of tools and machine parts. A part of it is reserved for the card cutting machines for jacquard motions on the braiding and bobbin machines.

On the third floor, Fig. 7, the stairway leads into the main workroom, E^1, which is well lighted by means of high windows. This room is used for assembling the different materials and manufacturing them into the finished articles. It contains a row of sewing and embroidery machines of different kinds. The sewing machines are driven from a light shaft to which power is supplied from the second floor.

Hand passementerie is made in the work rooms, F^1 and G^1, the first room being used principally for the manufacture of balls, tassels, rosettes for upholstery and room furnishings. The other room, G^1, is devoted to the manufacture of gold passementerie, epaulets, etc. The center room contains, in addition to the tambour machines, the machines for covering wood balls and forms of various kinds, such as olives, acorns, etc. These articles serve for tassels and clasps or frogs for coats, dress trimmings and upholstery decorations. In the other room, D^1, are the tables, l, m and n, used for applying the various articles to fabrics by means of special preparations. Woven and braided fabrics are sewed to the cloths to produce the desired design. In sewing the braid to the goods a chain stitch is used, which serves also for decorating the edges of the material. The regular sewing machines are located in the middle room, E^1. Next to the application room, D^1, is the designing room, C^1, where new patterns are prepared.

The mill is equipped for the production of all kinds of passementerie, including dress trimmings, upholstery goods, room decorations, uniforms, banners, coats-of-arms, vestments, fringes, lace trimmings, scarfs, tassels, roses, covered balls, acorns, olives, braid and boucle work, lace and embroidery.

AN IMPROVED CARDING MACHINE

A carding machine invented in France has recently been patented in this country and embodies a number of improvements which the inventor states consist of the substitution of an oscillatory sifting grating for the screening devices hitherto employed, and certain modifications of the carding roller system have for their object to increase the efficiency of the machine.

Fig. 1 shows an elevation of the mechanism. Fig. 2 shows a plan of the grating. Figs. 3 and 4 show the separate bars of the grating.

Fig. 1 shows how the two screens and the receptacle beneath the cylinder are replaced by a grating which serves the same purpose. This grating is composed of bars clamped together.

The bars, Fig. 4, which form the grating are reinforced at their ends in order to give throughout their length sufficient interstices to allow the escape of the impurities.

The bars shown in Fig. 3 are placed at the ends of the grating and are extended at the lower part. The grating is supported on a shaft. As the grating corresponds to the width of the carding roller it is necessary in order to prevent bending to place at suitable distances apart a bar of the shape, 4, in place of a bar of the shape, 3. The grating thus

constructed receives a continuous oscillating motion so as to cause to fall the impurities that are constantly being deposited during the working of the machine. This oscillating motion is obtained by an eccentric which actuates the crank fixed upon the shaft of the grating.

The inclined sheet iron plates placed underneath the card guide the refuse so that it is collected upon the ends of the bars. The purified refuse however remains upon the grating and approaches gradually to the cylinder. It is then finally seized by cylinder, 1, which is covered with pins, and is returned to the card. The single barred grating may be replaced by two or more oscillating screens of similar construction, but less size, which it would suffice to combine with re-collecting cylinders.

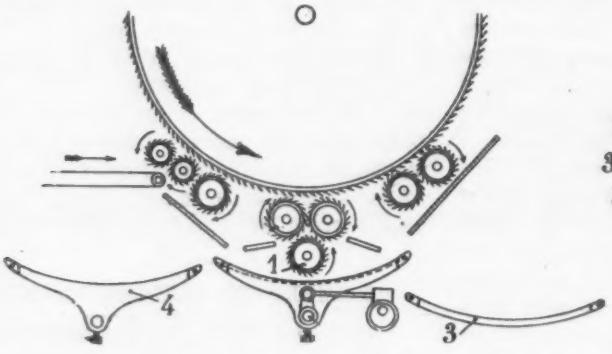


FIG. 3 FIG. 1

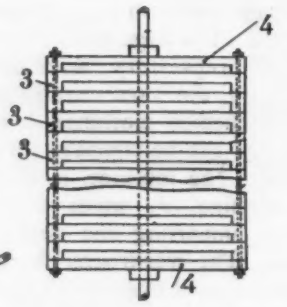


FIG. 4 FIG. 2

A SUBSTITUTE FOR WOOL

A Mexican process for producing materials that can be substituted for wool has recently been patented in this country and is described by the inventor as follows: The fibers of old bags made of jute, malva, hemp, maguey, ixtle, etc., as well as of old worn out carpets or other waste products of a like character, after having been mixed, are thoroughly washed with water in order to remove all foreign matter. The mixture is next subjected to a bath of caustic soda of 4° B., rinsed and then transferred to a bath of chloride of lime at 6° B., from which it is transferred without rinsing to a bath composed of sulphuric acid and bisulphite of soda at 5° B.

After the fiber has remained submerged from three to four hours in each bath, a basic bath composed of a solution of sulphuric acid and bisulphite of soda at 3° B. is prepared and heated to the boiling point, and the fiber allowed to remain submerged therein for two hours boiling constantly. It is then transferred to a bath composed of an absolutely cold solution of caustic soda at 20° B., a sufficient quantity of ice being used for this purpose.

By the sudden change of temperature, the mercerization of the fiber is produced, the fiber acquiring considerable brilliancy and strength. In order to complete the mercerizing operation and to give the fiber the necessary whiteness it must be placed in a bath composed of a solution of chloride of lime at 6° B. for two hours, and in a final composed of sulphuric acid and bisulphite of soda at 3° B. for one hour. The fiber is then dried thoroughly. In order to give it the appearance of wool, it is finally loosened and well combed by crushing and mixing devices. A product is obtained which is free from foreign matter, such as particles of wood and other impurities, and which has the smoothness and feel of animal wool and, even, of silk. It can be used in the manufacture of spun and woven goods, either just as it is, or after it has been mixed with a certain proportion of natural wool or silk, for the purpose of giving it a better appearance.

Personals

Frank W. Emerson, for a number of years superintendent of the Moosup Mill, American Woolen Co., Moosup, Conn., has been appointed agent of the mill to succeed R. S. Schouler.

Clifford Costine has been appointed superintendent of the Moosup Mill, American Woolen Co., Moosup, Conn. He formerly held a similar position with the Falls City Woolen Co., Louisville, Ky.

Ernest J. Hill has accepted the position as overseer of carding and spinning at the Saxton's River Woolen Co., Saxton's River, Vt. He formerly held this position and has recently been employed at the Piscataquis Woolen Co., Guilford, Me.

Forest V. Adams has accepted the position of overseer of finishing at the Ottaquechee Woolen Co., Evarts, Vt. He comes from Providence, R. I.

Frank J. Denico has accepted the position of overseer of carding at the Belknap Mills Corporation, Laconia, N. H.

Charles Tallis, overseer of carding at the Sawyer Mill, American Woolen Co., Dover, N. H., has resigned his position with that company. He was presented with a gold watch, chain and Elk fob as a token of the friendship and esteem in which he was held.

Myra Geer, forelady at the Windham Silk Co., Willimantic, Conn., has resigned her position with that company. The overseers and other employes of the company presented her with a handsome traveling bag.

James W. Smith, overseer of weaving at the York Manufacturing Co., Saco, Me., has resigned his position with that company after being employed there fifty years. He has retired from active mill work and will engage in business in a store at Old Orchard, Me.

John Lawton, overseer of dyeing at the Lebanon Mill, American Woolen Co., Lebanon, N. H., has resigned to accept a similar position with the Mayo Woolen Co., Millbury, Mass.

Joseph R. Lebau, second hand in the winding department at the Nyanza Mill, Woonsocket, R. I., has resigned to accept a position as overseer of the winding department for the Farwell Mill, Lisbon, Me.

James W. Kane has been appointed second hand in the winding department at the Nyanza Mill, Woonsocket, R. I. He formerly held a similar position at the Bennett Mill, New Bedford, Mass.

Abraham Woodhead, overseer of carding at the Belknap Mills Corporation, Laconia, N. H., has resigned his position with that company.

H. H. Taft has been elected president of the Piedmont Cotton Mill, Egan, Ga., to succeed B. L. Willingham.

Jefferson Coolidge has succeeded Theopilus Parsons as president of the Dwight Manufacturing Co., Alabama City, Ala.

J. Henry Madden has been appointed secretary of the Dunean Mills, Greenville, S. C., to succeed Claude L. Smith.

J. S. Mooty has been appointed superintendent of the Piedmont Mills, Egan, Ga.

John Gardner has accepted the position of overseer of spinning at the Martel Manufacturing Co., Egan, Ga.

S. N. Duggan has been appointed secretary of the Knoxville Spinning Mill, Knoxville, Tenn., to succeed William Slattery.

W. F. Sawyer has accepted the position of overseer of carding at the Weldon Cotton Mill, Weldon, N. C.

E. C. Little has been appointed superintendent of the Katrine Manufacturing Co., Fork Shoals, S. C.

L. H. Beck has been promoted from assistant to general manager of the Spaulding, Boyd-Mangham and Central Mills, Griffin, Ga.

Z. V. Gray has accepted the position of overseer of spinning at the Loray Mill, Gastonia, N. C.

G. G. Allen has accepted the position of assistant superintendent at the Prendergast Mills, Prendergast, Tenn.

G. A. Lane has accepted the position of overseer of spinning at the Prendergast Mills, Prendergast, Tenn.

F. L. Bunton, who for the past two and one-half years has been manager of the Chicago office of the Heine Boiler Co., has severed his connections with that company to become manager of the Chicago office of The Goulds Manufacturing Co., 3801-3811 S. Ashland Ave., Chicago, Ill., manufacturers of pumps and hydraulic machinery. Previous to his connection with the Heine Boiler Co. Mr. Bunton was for eight years manager of the Philadelphia and St. Louis offices of the Allis-Chalmers Co. He is a member of the American Society of Mechanical Engineers and is well known in the machinery and allied trades.

Andrew Archer has accepted the position of overseer of weaving at the Ray Mill, American Woolen Co., Franklin, Mass., a position which he held at the time the mill closed. Alexander Rodgers, overseer of dressing, has resumed work at the mill.

George E. Prest, superintendent of the Bourne Mill, Fall River, Mass., has resigned his position with that company to accept the position of general superintendent of the Suncook Mills Corporation, Suncook, N. H.

Louis A. Billington, of Centreville, R. I., has been appointed paymaster at the Lancaster Mill, Clinton, Mass., to succeed George W. Dunn.

Edward Bottomley has accepted a position as pay master at the Pioneer Mill, Pittsfield, Me., recently purchased by the American Woolen Co. He comes from Enfield, N. H.

Thomas A. Sullivan, overseer of spinning at the Farwell Mill, Lisbon, Me., has resigned his position with that company.

C. W. Johnson has been appointed president of the Jewel Cotton Mill, Thomasville, N. C.

Joseph Butler has accepted the position of overseer of finishing at the Eganville Woolen Mill, Eganville, Ont., Canada.

Joseph B. Charlesworth has accepted the position of overseer of carding and spinning at the Lawrence, Webster Co., Malone, N. Y.

Delmont E. Nason, overseer of weaving at the Blackstone Manufacturing Co., Blackstone, Mass., has tendered his resignation with that company after several years of service.

William H. Harris, formerly treasurer and agent of the Slater Manufacturing Co., Pawtucket, R. I., has opened an office at 346 Broadway, New York City. Mr. Harris has entered into the general brokerage business.

Charles E. Thomas, treasurer of the Woonsocket Machine & Press Co., Woonsocket, R. I., has tendered his resignation to take effect about January 1. Mr. Thomas is a man who is well known throughout New England and is leaving his present position with the good will of the directing heads of the company. He was formerly superintendent of the Pontiac Mill of the B. B. & R. Knight Co.

J. Gordon Patterson has been appointed manager and agent of the Hadley Mill, South Hadley Falls, Mass. He was formerly employed as assistant to the treasurer of the Pacific Mill, Lawrence, Mass.

Townsend Palmer has been appointed treasurer of the I. E. Palmer Co., Middletown, Conn., manufacturers of hammocks, canopies, etc.

George H. Pratt has been appointed president of the Jewett City Textile Novelty Co., Jewett City, Conn. Alexander McNicol has been appointed secretary and buyer for this company.

Charles W. Hill, agent of the Hamilton Woolen Co., Globe Village, Southbridge, Mass., has tendered his resignation after twenty-five years of active life. His son, Henry, will succeed him.

John W. Moss, who has been assistant superintendent of the Bourne Mill, Fall River, Mass., has been appointed superintendent of the mill. Mr. Moss has been in the employ of the Bourne Mill for about twelve years and is a graduate of the Bradford-Durfee Textile School.

Charles H. Sorenson has been appointed superintendent of the Union Knitting Mills Co., Logan, Utah. He was formerly employed with Silver Bros., Salt Lake City, Utah.

Myron Maynard, overseer of dyeing at the Lowell Bleachery, Lowell, Mass., has resigned to accept a position at St. Louis, Mo. He was presented with a handsome traveling bag by the overseers and employes at the Lowell Bleachery.

J. H. Carr, for twenty years electrician at the Arnold Print Works, North Adams, Mass., has resigned his position with that company.

Charles W. Lynch, overseer of carding at the Brampton Woolen Co., Penocook, N. H., has resigned his position with that company.

George Fraser has accepted the position of overseer of carding at the Brampton Woolen Co., Penacook, N. H.

Thomas M. Bamber has accepted the position as designer at the Newmarket Manufacturing Co., Newmarket, N. H. He comes from Plainfield, Conn.

James Murphy has accepted the position of overseer of carding for John & James Dobson, Inc., Scott's Lane, Falls of Schuylkill, Philadelphia, Pa.

Charles McCartney has accepted the position of overseer of finishing at the Forest Mill, American Woolen Co., Bridgton, Me.

David M. Mullin, overseer of knitting at the Adler Underwear & Hosiery Co., Cincinnati, O., has resigned his position with that company to accept a position with the Darn-no-more Hosiery Co., Chicago, Ill.

Fred Jackson has accepted the position of overseer of dyeing with McCleary, Wallin & Crouse, Amsterdam, N. Y.

T. F. Holt has accepted the position of overseer of dyeing at the Lanett Bleaching & Dye Works, West Point, Ga.

W. A. Marley has accepted the position of overseer of spinning at the Prendergast Cotton Mill, Prendergast, Tenn.

W. I. Henson has accepted the position of overseer of carding at the Brown Manufacturing Co., Concord, N. C.

H. L. McCall has been appointed superintendent of the Yazoo Yarn Mills, Yazoo City, Miss.

R. P. Scruggs has accepted the position of overseer of spinning at the Louise Mill of the Chadwick-Hoskins Co. of Charlotte, N. C. He will succeed W. R. Ennis.

James Hagood has accepted the position of superintendent of the Pendleton Manufacturing Co., Autun, S. C.

W. A. Stone, superintendent of the Pendleton Manufacturing Co., Autun, S. C., has resigned his position with that company.

Major J. Mandel, president of the Darling Woolen Mill Co., with mills at Holliston, Holden and Worcester, Mass., has resigned his position with that company. Budd Mandel, vice-president of this company, has also resigned.

Clarence S. Bodfish has been appointed agent of the Waverly Mill, American Woolen Co., Pitts-

field, Me. He has been superintendent of the Bay State Mill, American Woolen Co., Lowell, Mass.

Ulick Burke, for a number of years overseer of dyeing at the Carolina Mills, Carolina, R. I., has reentered their employ in a similar position.

Edward Yeaw, for the past nine years second hand in the carding department at the Warwick Mills, Centerville, R. I., has resigned to accept a position as overseer of carding at the Ponemah Mill, Taftville, Conn.

Thomas Kegan has accepted the position of overseer of weaving at the South Bend Woolen Co., South Bend, Ind. He was formerly employed at the Falls City Woolen Co., Louisville, Ky.

George R. Paige, overseer of carding at the Bridgewater Woolen Co., Bridgewater, Vt., has resigned his position with that company.

John Delaney, second hand in the spinning department at the Nyanza Mill, Woonsocket, R. I., has resigned to accept the position of overseer of spinning at the Farwell Mill, Lisbon, Me.

William Wildie, overseer of dyeing at the Arlington Mills, Lawrence, Mass., has resigned his position with that company. The help in the dyeing department presented him with a gold watch and chain, also a Meerschaum pipe. He has secured a more responsible position with a large firm and will take up his new duties in a short time.

J. M. Pearman has accepted the position of overseer of carding and spinning at the Lavonia Cotton Mill, Lavonia, Ga. He was formerly employed at the Princeton Manufacturing Co., Athens, Ga.

C. W. Parrott has been appointed superintendent of the Hartwell Cotton Mills, Hartwell, Ga.

T. I. Garris has accepted the position of overseer of weaving at the Salisbury Cotton Mill, Salisbury, N. C.

W. G. Broadfoot has been appointed superintendent of the Brown Manufacturing Co., Concord, N. C. He was formerly employed as salesman for the Saco Lowell Shops.

N. C. Richardson has been appointed superintendent of the Glenola Mills, Eufaula, Ala. He was formerly employed at the Social Circle Cotton Mills, Social Circle, Ga.

J. J. Crosby has accepted the position of overseer of weaving at the Wylie Mill, Chester, S. C.

W. E. G. Robinson has been appointed superintendent of the Robeson Manufacturing Co., Charlotte, N. C. He was formerly employed at the Franklin Mills, Concord, N. C.

O. L. Derrick has accepted the position of overseer of carding at the Hamilton Carhartt Mills, Rock Hill, S. C.

J. F. Clark has been appointed superintendent of the Hopedale Mill, Burlington, N. C.

Robert Wilson, Sr., has accepted the position of superintendent of carding and spinning at the Swift Manufacturing Co., Columbus, Ga. He was formerly employed as assistant superintendent at the Eagle & Phenix Mills, in the same city.

Frank Stiner has accepted the position of overseer of finishing the the Arms Mill, American Woolen Co., Skowhegan, Me. He formerly held this position and was last employed as overseer of finishing at the Ashtabula Worsted Co., Ashtabula, O.

A. J. Bullock, overseer of carding at the Lancaster Mill, Clinton, Mass., has resigned his position with that company to accept one as assistant superintendent at the Stark Mill, Manchester, N. H.

Ralph S. Nelson has been appointed overseer of cloth finishing at the Amoskeag Manufacturing Co., Manchester, N. H., to succeed Henry A. Farrington.

Gorham N. Norton has been appointed agent of the Sonnhill Worsted Co., Danielson, Conn., to succeed P. E. Meissner.

Grant Walker has been appointed president of the Naumkeag Steam Cotton Co., Salem, Mass., to succeed the late John Brooks.

Russell H. Leonard has been elected treasurer of the Wampanoag Mill, Fall River, Mass., to succeed Frank Shove. Mr. Shove has been elected president to succeed William H. Jennings.

William C. Damon, formerly agent of the A. L. Sayles Co., Pascoag, R. I., has been appointed superintendent of the Waterloo Woolen Manufacturing Co., Waterloo, N. Y., to succeed John C. Shanks.

Harry Tunstall has been appointed agent of the Wamsutta Mill, New Bedford, Mass., to succeed Herbert E. Walmsley. Mr. Tunstall has been connected with mills in Westerly and Pawtucket, R. I., Fall River, Mass., and his last position was superintendent of the Grant Yarn Co. at Fitchburg, Mass.

John Whittemore, superintendent of the Annawan Mill, Fall River, Mass., has been appointed treasurer, agent and buyer.

Walter F. Hodges has been appointed superintendent of the Indian Orchard Mill of the Hodges Fibre Co., Indian Orchard, Mass. He comes from Medway, Mass.

S. F. Jones, paymaster at the Waverly Woolen Mill, American Woolen Co., Pittsfield, Me., has resigned his position with that company. He is succeeded by Herbert Palumbo of Providence, R. I.

J. C. Elliott has been appointed overseer of carding at the Piscataquis Woolen Co., Guilford, Me. He was formerly employed at the Indian Spring Mill, Madison, Me.

Ralph J. Weeks, overseer of carding at the Wakefield Manufacturing Co., Wakefield, R. I., has resigned his position to accept a similar one with the Bridgewater Woolen Co., Bridgewater, Vt.

William Sykes has accepted the position of overseer of dyeing at the Lebanon Mill, American Woolen Co., Lebanon, N. H.

Luther M. Smith, for twenty-three years overseer of the mule spinning department at the Nourse Mill of the Manville Co., Woonsocket, R. I., has resigned his position with that company owing to the replacing of ring spindles in the mule spinning department. He intends to take up farm work at East Killingly, Conn.

C. H. Goodroe has been appointed superintendent of the Perkins Hosiery Mill, Columbus, Ga.

C. L. Montjoy has been appointed superintendent of the Monaghan Mills, Walhalla Mills, Walhalla, S. C., to succeed G. H. Jones. He was formerly employed at the Apalache Mill, Arlington, S. C.

John F. Scott, superintendent of the Pickett Cotton Mills, High Point, N. C., has resigned to accept a similar position with the Edna Mills, Reidsville, N. C.

C. A. Lewis has accepted the position as night overseer of spinning at the Prendergast Cotton Mills, Prendergast, Tenn.

C. H. Price has accepted the position of overseer of spinning at the Brown Manufacturing Co., Concord, N. C.

D. W. Williams has accepted the position of overseer of weaving at the Pacolet Mill, Trough, S. C. He was formerly employed at the Ottaray Mill, Union, S. C.

A. C. Bullock, overseer of carding at the Lancaster Mill, Clinton, Mass., has resigned his position to accept a similar one with the Stark Mill, Manchester, N. H.

James S. Bradbury has accepted the position of overseer of carding at the Killingly Manufacturing Co., Killingly, Conn.

William Batten, overseer of carding at the Killingly Manufacturing Co., Killingly, Conn., has resigned his position with that company.

DEATHS.

Edgar W. Turnbull, who has been associated with Cheney Bros., silk manufacturers, South Manchester, Conn., for the past thirty-six years, died of apoplexy at his home in Brooklyn, N. Y. He was 54 years of age, and is survived by his wife and one son.

Franklin J. Clark died at the St. Barbaras Hospital, Woolford, Me., December 5. The death of Mr. Clark removes one who has long had a prominent place in the affairs of Franklin County. Mr. Clark formerly operated what is known as the Walker Mill at East Wilton, Me., and conducted the business for a number of years. Since selling the property at East Wilton he has been in retirement.

John Duffy, a member of the Duffy Silk Co., with mills at Fort Plain, Phoenix and Buffalo, N. Y., died at his home in Fort Plain after a short illness of pneumonia at the age of 54 years.

George S. Rogers, one of the best known textile manufacturers of Northern New England, died at the Adams House, Boston, Mass., December 1, at the age of 71 years. Mr. Rogers was a member of the firm of Carter & Rogers, manufacturers of woolen goods at Lebanon, N. H.; treasurer of the Everett Knitting Works of Lebanon and president of the Mascoma Savings Bank. He was born in Plymouth, N. H. At the age of 20 years he erected a small woolen mill at Thetford Centre, Vt. At the time of his death he was owner of Hotel Rogers in Lebanon.

Louis F. Hadley, 85 years of age, died at Traverse City, Mich., and was buried in Burr Lake, Mich. Mr. Hadley was the inventor of the Lamb knitting machine and was widely known in Northern Michigan as a surveyor and map maker. He lived several years in the Indian territory.

William Crossley, for a number of years foreman of the dyeing department at the Saxonville Mill, Saxonville, Mass., died at his home in Westboro, Mass., at the age of 59 years. At the time of his death he was interested in a textile manufacturing company at Westboro.

William Thomas Howard, 59 years of age, died at Willimantic, Conn., November 26. He was overseer of the mule spinning department at the Quidnick-Windham Manufacturing Co. of that city for a number of years. His home was in New Bedford, Mass., where he had a wife and several children.

Richard Carden, 65 years of age, died at Lawrence, Mass., November 28. He was overseer of the wool sorting department at the Arlington Mill, Lawrence, for a number of years. Two sons and two daughters survive him.

Forster G. Heaton, 31 years of age, who was overseer of dyeing at the Mayo Woolen Co., Millbury, Mass., met death by accidentally falling into a boiling vat in the dye house. Mr. Heaton was widely known in Lowell and Lawrence before going to Millbury and his many friends will be grieved to learn of his death.

Walter B. Guild, who was for many years engaged in the textile publishing business, died at his home in Roxbury, Mass., on December 13. He had been in poor health for several years. He was born in Wrentham, Mass., in 1855 and was a descendant of John Guild, one of the early settlers who came over in 1836. He was educated in the public schools of Wrentham and Dorchester and when quite a young man became employed with a textile publication known as the "Boston Textile". He soon became the owner of this publication and purchased several other textile publications now long forgotten. These included the "Designer and Weaver", "Warp and Weft" and the "Woolen Manufacture". These were finally combined in a publication known as the "American Textile", which was afterwards consolidated with the "Industrial Record" of New York.

In 1887 Mr. Guild formed a partnership with Henry G. Lord under the firm name of Guild & Lord. That firm established the "Textile World" and some years afterwards purchased the "Indus-

trial Record" and later merged with the "Textile Record" of Philadelphia to form the present "Textile World Record". Prior to that time, in 1895, Mr. Guild had retired from the firm, which however was still conducted by Mr. Lord under the name of Guild & Lord until 1903. Since leaving the textile publishing business, Mr. Guild has been principally identified with advertising and newspaper work and conducted a press service which supplied to newspapers throughout the country a household department for which many of the best known writers on these subjects contributed. He wrote many articles for newspapers and magazines, and being very fond of children, had written many charming fairy tales, some of which had very large circulation.

He was of an inventive turn of mind and while connected with textile interests invented a self calculating scale of which large numbers were sold and many are still in use. He also perfected various testing devices and yarn beams, reels, etc. Mr. Guild was always active in temperance and philanthropic work. He was one of the early trustees of the Baptist Hospital and was an enthusiastic worker in the church. Always genial, of the strictest integrity, generous to a fault, he was sustained through life by a boundless optimism and faith in his fellowmen. He leaves a wife and one daughter.

John Franklin Brooks, president of the Naumkeag Steam Cotton Co., Salem, Mass., and a prominent Boston merchant, died at his home in Boston, Mass. He was born in Salem, October 5, 1838. He received his early education in the public schools and graduated from the Salem Latin School in 1853. He was a member of the Salem Club, Union, Algonquin and Eastern Yacht Clubs. His wife died in 1884. Two daughters survive him.

James Sabin Davis, for fifty-six years in the employ of the Quinebaug Co. in their Providence, R. I., office in the capacity of secretary and bookkeeper, died at his home in that city at the age of 72 years. He began work with this company in 1858. His wife and two daughters survive him.

Charles H. Firth, overseer of dyeing at the Lincoln Woolen Co., Camden, Me., a very skillful man in his line, died at his home in that city at the age of 42 years. He had been in ill health for several years and while he managed to report at the mill each day it was not until the last few weeks that he was obliged to give up entirely. He was a man of honesty and highest integrity. His wife and three children survive him.

David Morrice, a member of the firm of D. Morrice & Co., of Montreal, Canada, died at his home in that city December 19. In the death of Mr. Morrice, Montreal loses an estimable citizen. He was 85 years of age. In 1862 he established the firm of D. Morrice & Co., who control the output of a large number of cotton and woolen mills in Canada and sell goods on commission basis. Mr. Morrice was a member of a number of clubs and is survived by five sons, Mrs. Morrice having died last November.

Alfred D. Gleason, president and owner of the A. D. Gleason Mill at Gleasondale, Mass., also member of the firm of J. P. Stevens & Co., with office in New York and Boston, died December 26 at his home in Gleasondale. Mr. Gleason was a director of the Stevens Linen Mill at Webster, Mass., also president of the Hudson, Mass., National Bank. He was a Knight Templar and a member of the Home Market, Country and Middlesex Clubs He was born Feb. 7, 1840. His wife and one daughter survive him.

Robert McArthur, who retired in 1910 as agent of the Pepperell Manufacturing Co., Biddeford, Me., after twenty-three years of service, died suddenly at his home in that city at the age of 76 years. He was born in England and on coming to this country took up work in a cotton mill. He was also connected with mills at Millville, N. J.; Sutton, Mass., and Grosvenordale, Conn.

Simon Parker, 45 years of age and a resident of North Smithfield, Mass., died at his home after a short illness. Mr. Parker was for a number of years loom fixer at the Perseverance Mill, Woonsocket, R. I. He was born in Canada and came to the United States when he was 18 years of age. His wife and five children survive him.

FACTS AND GOSSIP.

Utah, Provo. At the meeting of the directors of the Knight Woolen Mills it was decided to take on additional help and increase the output.

*Utah, Salt Lake City. Jonas Brolin, of Water town, South Dakota, is in communication with the Salt Lake Commercial Club regarding the location of a linen factory in Salt Lake City. Mr. Brolin was superintendent of the Western Linen Company, Duluth, Minn., in 1909-10-11. This company later developed into the Western Rug Company. Mr. Brolin states that he is interested in the climate and the quality and length of flax raised in Utah, and that if right connections can be made he will locate there. Regular equipment for spinning tow yarn will be installed if the project is carried to a successful conclusion and if a plant is established.

Vermont, Ludlow. According to report the Black River Woolen Company has secured a large order for army overcoating, which will keep the plant running to full capacity for at least two months.

Vermont, Winooski. Fire partially destroyed the carbonizing plant of the Burlington Mill of the American Woolen Company. At the Boston office it was stated that repairs would be made at once. While this department is out of use the carbonizing will be done for the Burlington Mill in other plants of the Company.

*West Virginia, Philippi. W. L. Fordyce has not fully organized his projected $25,000 woolen mill company and no report can be given as yet. Mr. Fordyce was formerly connected with the Webster Woolen Mills Company of Webster, W. Va., which was burned a year or two ago.

New Publications

Any work noticed under this heading can be obtained, postage or express charges free, by sending the price listed to Lord & Nagle Company, 144 Congress St., Boston, Mass. A catalogue of textile books in the English language will be sent free on application.

BUSINESS LITERATURE

Licker-in Grinding and Dressing Machines; Dronsfield Bros., Ltd., Atlas Works, Oldham, England.

In our July, 1913, issue we published a description of the Dronsfield licker-in and bur cylinder grinding and dressing machine, which has been introduced into a number of the leading English mills. Since the machine was first placed on the market it has been improved by the addition of a device for reclothing and remounting new wire when the licker-in wire has become badly worn or damaged. The improved machine is described in a pamphlet recently published by Dronsfield Bros., a copy of which will be mailed on application to that firm.

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One Hundred Years of Business; W. C. Plunkett & Sons, 1814-1914.

This book has been published to commemorate a record of one hundred years from 1814 when the business of W. C. Plunkett & Sons was established with 708 spindles and 26 looms, to 1914 when they now operate 370,000 spindles and 8,000 looms. The first mill was a brick building 75 feet long by 32 feet wide, three stories high, a picture of which serves as the frontispiece of the book. There is an interesting account of the development of the business and the vicissitudes through all of which the company remained solvent, a remarkable and enviable record. There are many attractive views of the mill buildings at different dates from 1814 to 1914, along with interior views of the present plant and a scene in the cotton plantation which is controlled by the company.

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How Scientific Management is Applied; 128 pages, 4 1/2 by 7; The System Co., Chicago and New York.

A second edition of this work has recently appeared. The object is to give clear directions for the application of scientific management to workshops, the contents being arranged under the following heads: What Scientific Management Is; The Five Steps to the One Best Way; Setting Standards with a Stop Watch; Balancing Stockroom Supply and Demand; Putting Standards into Practice; How a Planning Department Works; Laying Out Work for Each Man; How Men are Trained to Industry; Inducing Men to Increase Output; Paying Higher Wages to Cut Costs. The work is freely illustrated and cannot fail to be of value to those desiring to become familiar with the practical application of efficiency systems.

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Steam Boilers and Boiler Feed Water; The American Boiler Life Co., 19 North Market St., Boston, Mass.

An 8-page booklet which has been carefully prepared and contains much information of interest in regard to the scientific treatment of steam boilers and boiler feed water. This chemical combination is known as "American boiler life" and is a perfect metal preservative. In new boilers it will not only neutralize the limes, magnesium, silicates, etc., in the feed water, but will prevent oil or grease from cohering and settling in the form of sludge; and will at once form a thin skin over all heating surfaces, preventing corrosion or pitting.

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The Little Journal; A. D. Little, Inc., 93 Broad St., Boston, Mass.

A. D. Little, Inc., publishes occasionally a four page paper which is filled with interesting material having some bearing on chemical matters. It is not in the least technical but full of newsy items and information of general interest. The December issue contains a particularly valuable article on "Imported Raw Materials Affected by the War." Many of these have bearing on the textile industry. The article gives the amount of importations, the countries they come from and what effect the war has had, also what steps are being taken to overcome the difficulties. While primarily published for the friends and clients of the A. D. Little organization, it would be mailed without charge upon request.

Industrial Notes

CALENDARS

The Draper Co., Hopedale, Mass., issue their calendar in similar form to that in which it has appeared before. It is arranged not only with the usual monthly sheets, but supplementary sheets are added with space for each day to note engagements. It is mounted on a rich, dark green background surmounted by a colored embossed reproduction of the Northrop loom and is a fine piece of color embossed printing. Below it is a picture of an old hand loom showing the contrast between the old and the new. They also send new pads for their big daily wall calendar and fresh booklets for the pocket memorandum books.

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The Dinsmore Mfg. Co., builders of mill sewing machines, Salem, Mass., present their compliments to their friends and customers in the shape of an attractive calendar representing an old colonial scene entitled "The Mayflower of America, John Alden's First Call on Priscilla." It is appropriate that an old Salem concern should choose such an attractive colonial subject.

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The Root Mfg. Co., who make the Tivoli standard underwear, Cohoes, N. Y., have a very attractive calendar this year. The picture is a reproduction of a painting by Shiren entitled "Scotland-by-the-Sea". It represents a typical Scottish coast scene with sheep in the foreground.

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E. O. Spindler, 350 Broadway, New York City, importer and agent for Dubied Knitting Machin-

ery, has an excellent taste in calendars. This year's is in a panel form. The picture represents a beautiful young girl in bridal dress descending the stairs. The coloring is very fine.

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C. S. Dodge, manufacturer of pickers, Lowell, Mass., is sending out a calendar which will find a good place on many an office and home wall. The picture is entitled "Good Night" and is copied from a painting by Elsley. It represents a little girl who is bidding good night to her big St. Bernard playfellow, who with two little puppies seems to appreciate her words. It is a very pretty subject.

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GOLD SEALS

Gold seals and labels make a very attractive stamp on textile packages as well as hosiery and knit garments and are being used quite extensively by progressive manufacturers who pay attention to the undoubted selling value of an article or package which is attractively put up.

F. E. Mason & Son, Batavia, N. Y., have just got out their 1915 line of samples of embossed gold seals and labels. They guarantee these to be tarnish proof and that they will not change color in any climate or under any conditions. They invite those interested to send for these samples and get prices.

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TAYLOR & BURGESS COP TUBES

Charles F. Taylor, cop tube manufacturer, located at 57 Weybosset St., Providence, R. I., is still manufacturing the Taylor & Burgess cop tubes with the same degree of satisfactory results as during thirteen years ago. In 1867 these tubes were awarded a gold medal for workmanship, quality and tests and have ever since maintained their reputation.

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PATENTS IN EUROPE

Bulletin of New York Merchants' Association

With the exception of Belgium, the Patent Offices in all the European countries are transacting business as before the war, except that many of them act less promptly upon applications.

In most of the European countries, including those which are not at war, provisions have been made with a view to relieving difficulties which may be encountered in maintaining the validity of patents by payment of taxes and working, but the diverse provisions (with few exceptions) are either inapplicable to citizens of the United States or too uncertain to be safely relied upon.

France has made a broad provision applicable to all patents whereby payments of taxes and even filing fees may be suspended until the cessation of hostilities.

Germany has provided an extension of time of nine months for paying taxes upon condition that the applicant file in due season a petition to that effect and prove that the war is the direct cause for his inability to effect the payment.

Austria has provided for an extension of time upon petition, but whether it applies in favor of those not actually engaged in the war or to citizens of the United States is too doubtful to render it certainly available.

Hungary has provided a moratorium of two months for the payment of annual taxes on patents.

Great Britain has made no provision for any extention of time applicable to patents.

Norway has provided a certain extension of nine months upon payment of a fine, but in view of the fact that communication by mail with Norway is open it is not advisable for citizens of the United States to rely upon its application.

Spain provides for accepting the payment of taxes where the delay is proved to be due directly to the war. Such proof would be difficult in the case of citizens of the United States.

Portugal has provided for delay until after cessation of the war upon condition that the payment then made be considerably greater. As payments may be made in Portugal without difficulty, it is unnecessary for citizens of the United States to resort to this.

Provisions more or less like the foregoing have been made or may be expected in other countries, but unless conditions are materially changed, it is plainly advisable for citizens of the United States to take steps necessary to maintain their industrial property abroad as if there were no war.

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GOODYEAR REPORT

Reports presented to stockholders at the annual meeting of The Goodyear Tire & Rubber Co.,, held at Akron, disclose that 1914 was the most successful and satisfactory in the Company's history. The earnings for the year ended October 31 were equivalent to more than 36 per cent. on common stock. Net income was $3,391,000, out of which was paid 7 per cent. dividend on the preferred stock and 12 per cent. on the common stock.

In its balance sheet the company makes an excellent showing with current assets of $11,039,000 againts current liabilities of $668,000. During the year the slate was cleaned of notes payable aggregating $3,653,000. As usual, Goodyear carries its patents, trade marks and designs, or "good will" on its books at $1.00, and all the figures on the asset side are real, tangible values. Cash on deposit and on hand has increased from $1,141,000 in 1913 to $2,862,000 in 1914, or more than 150 per cent.

The stockholders reelected the directors, F. A. Seibe-ling, C. W. Seiberling, G. M. Stadelman, F. H. Adams, P. W. Litchfield, H. B. Manton and J. P. Loomis—and the officers of the company were also reelected, as follows: F. A. Seiberling, President and General Manager; C. W. Seiberling, Vice President; G. M. Stadelman, Secretary; F. H. Adams, Treasurer; W. E. Palmer, Assistant Treasurer and P. W. Litchfield, Factory Manager.

President Seiberling, in his annual report to the stockholders, demonstrated that the Company enters 1915 with greater strength and with brighter prospects than ever before.

LOOM SUPPLIES

The E. H. Jacobs Mfg. Co., Danielson, Conn., manufacturers of every variety of leather, duck and ticking loom supplies for mills, are distributing to weavers, overseers of weaving, or superintendents of cotton mills, a vest pocket memorandum book, which also includes letters from various manufacturers who have used the "Verybest" lug straps, manufactured by this concern.

LOOMS IN 1814 AND 1914

From the Richmond Daily Compiler, Aug. 17, 1814

The Loom—This admirable piece of mechanism, at once the triumph of American ingenuity and one of the surest pillars of her independence, remains still at the Capitol for the inspection and gratification of the curious. A number of ladies and gentlemen visited it yesterday, and all were surprised and delighted at the simplicity of its construction and movement, the rapidity of its execution, and the excellence of the fabrik which it produces. That now in the loom is a piece of cotton shirting worth about 75 cents per yard, and it is truly interesting to observe how visibly to the eye the operation of the machine causes it to grow into existence. We are told that a young girl of ordinary capacity may in two or three days learn to weave at the rate of 15 yards a day; and a more skilful artist, 25 to 30 yards. The shuttle, it is said, may be thrown with the astonishing celerity of 150 to 200 times in a minute; and the manual power requisite to produce this lightning movement is not greater or more laborious, apparently, than that which would be necessary for the grinding of coffee and the churning of butter. The economical and the curious, the industrious and the fashionable, the money-making and money saving in the domestic or manufacturing line—and in short all the citizens of Richmond, are invited to go and examine this chief d'oeuvre of the useful arts.

It is a long way back to Aug. 17, 1814, on which date the article which we reprint on front page appeared in the columns of a Richmond, Va., paper. It is seldom that we have opportunity to quote news 100 years old which is of interest to the cotton manufacturers of today.

The article in question describes the first power loom as a "Triumph of American Ingenuity and One of the Surest Pillars of Her Independence," words which were truly prophetic.

It is noteworthy that the number of picks per minute mentioned is practically the same today; the yards per loom per expert weaver have increased 75 to 100 per cent.; the selling price of the goods has been reduced 80 to 90 per cent. and the productive capacity per weaver has been increased 20 to 30 fold.

Closely following the power loom came the invention of the first self-acting loom temples by Ira Draper. This improvement enabled the weaver to tend two looms and thus reduced the labor cost of weaving one-half, while at the same time making the work easier.

From time to time improvements were made in the let-off, the take-up, the shuttle motion, and the temples, which were the subjects of numerous patents, and these improvements were introduced by our predecessors. From the early '70s, however, until the first Northrop Looms were placed on the market in the latter part of 1894, looms for plain cotton fabrics made no progress; although by this time many weavers were sufficiently expert to tend from six to eight looms each on print cloth weaves.

The Northrop Loom by its automatic features made it possible for a weaver with hardly any experience to operate 16 looms, with a corresponding reduction in the labor cost of weaving; at the same time the weaver was enabled to earn more wages.

Since the first Northrop Looms were placed upon the market further improvements have made it possible to increase the number of looms per weaver; to increase the product per loom and to greatly improve the quality of the cloth. A comparison of our two illustrations shows the development in loom design and construction during but little more than a century.—Cotton Chats.

NEW COURSES IN TEXTILE EDUCATION

The New Bedford Textile School is offering to evening students, who enter for the second term this year, two new courses which represent something of a new departure in the work of this school. In these courses the school will give advanced instruction in work on pickers, cards and roving frames. They will be open only to third hands of pickers, cards and roving frames, second hands and overseers of carding, and former students who have taken these subjects at the school.

The work in the new classes will consist of practice in setting the machines for different weights and speeds, and calculations. They will be held each one night a week, the two courses coming on separate nights so that the same men could take both courses if they desired. One class will be on pickers and cards, the other on roving frames. Mr. Smith, head of the carding and spinning departments, will have charge of both classes. The New Bedford school is to offer a course in cost finding to day students beginning with the second term.

READY FOR BUSINESS

We are informed by Dr. W. Beckers, proprietor of the W. Beckers Aniline & Chemical Works, Brooklyn, N. Y., that the fire and ensuing explosions in November damaged only a small part of their warehouse and manufacturing plant. Most of the damage was done to the buildings containing the laboratories and offices and a few days after the fire they were able to resume manufacturing and shipping and can fill orders as in the past. It will be remembered that this accident occurred while experiments were in progress to effect the manufacture of more dyes in this country similar to what we have imported from abroad. One of Dr. Beckers's assistants was killed, but Dr. Beckers himself, while seriously injured, has sufficiently recovered to attend to business once more and expects to continue his research work as well as the commercial manufacture of the dyestuffs.

GOODYEAR BALATA BELTING

In the mechanical goods department of the Goodyear Tire & Rubber Co. there are 21 men whose combined experience in that one department exceeds 126 years. One man alone has had 27 years experience. These specialists direct the work of other experienced men and this explains in some measure the high degree of perfection which the Goodyear mechanical products have attained. When they took up the manufacture of Balata belting they studied the problem first from the theoretical side and then gave it every practical test. Five hundred and forty-six Goodyear Balata belts are used every day in the Goodyear factories alone where they had an opportunity to watch them side by side with other forms of belting so that they had thoroughly tried them out before they were placed on the market and demonstrated remarkable endurance. They resist oxidization, hug the pulleys without slipping and are impervious to moisture. Under breaking test Goodyear Balata belting 3-inch 4-ply broke under a strain of 6,280 pounds in comparison with three other makes tested, the nearest being 5,820. They use as a basis for this belting long staple cotton such as is used in Goodyear No-Rim Cut Tires. This is plaited in a peculiar manner advised by their experts, stretched to uniform tension, all the fibers lie parallel in the threads and because they use a fine yarn firmly woven and closely laid up, they get a finished belt devoid of stiffness and of lesser bulk which eliminates all jerk at the pulleys, reduces the wear and excessive strain not only on the pulley, but also on the drive wheel bearings. This fine duck fabric is then passed many times through huge machines which force the Balata gum entirely through it so that every thread is saturated and the belt is thoroughly impregnated. Goodyear Balata belts stretch less than 1 per cent. and yet maintain remarkable flexibility. A booklet describing the Goodyear belting has been published which may be had upon application, which gives a number of useful suggestions as to the care of belting, how to find the horse power that belting will transmit and other data.

COTTON PRICES IN GERMANY

The Department of State is in receipt (Nov. 3) of a cablegram from the American embassy at Berlin stating that the supply of cotton is about sold out in Bremen, which is the principal cotton market of Germany. Small quantities of good middling are being quoted at 85 pfennigs per half kilo (18.352 cents per avoirdupois pound). Two weeks ago the figure was 72 pfennigs (15.546 cents per pound), and four weeks ago 68 pfennigs (14.682 cents per pound). A price of 57 pfennigs per half kilo (12.307 cents per pound) is offered for new-crop fiber, but quotations will naturally be influenced by the quantity arriving. At Hamburg spot cotton is quoted at 90 pfennigs (19.432 cents per pound) and 85 pfennigs (18.352 cents per pound) offered for later delivery, with a drop in price likely should new cotton arrive in quantity.

In the interior of Germany—at Stuttgart and Munich—the price is 1 mark per half kilo (21.591 cents per pound); at Magdeburg, 72 pfennigs (15.546 cents per pound); at Coburg, 60 to 65 pfennigs (12.955 to 14.034 cents per pound) for cotton coming by way of Genoa or Swedish ports; at Cologne, 78 pfennigs (16.841 cents per pound) delivered at Cologne; at Dresden, 75 pfennigs (16.193 cents per pound), this being the quotation on October 17. In Leipzig prices range from 66 to 107 pfennigs per half kilo (from 14.25 to 23.102 cents per pound), free Leipzig, according to quality.

CARPET-WEAVING WAGES IN YORKSHIRE

Consul Augustus E. Ingram, Bradford, Eng., Oct. 8

About 70 young women employed as broad-loom weavers in the Axminster carpet department of the Firth mill near Bradford recently struck on account of the proposed reduction of 25 per cent. in wages. A circular issued by the management to the employees contains the following:

"The weaving of broad carpets, seamless, was introduced by us at Heckmondwike some years ago and has proved a very good thing for the workpeople. We have developed it, putting up buildings, and buying heavy, expensive machinery, and it is now being carried on under almost ideal conditions as far as the workers are concerned. The rate of wages when the business was commenced was based upon the old hand-loom price and was intended to be temporary while the loom was being devloped and perfected. This has now been accomplished, and the rate should have been altered long ago. We did not, however, alter it so long as we were doing well out of the goods. For a year or two, however, competition has been extremely keen and prices low, and last year the trading in this department resulted in a loss. One of the reasons was that we were undersold all the time. We therefore decided as soon as we saw the result up to last June, that this must be altered and only delayed till we got to know authoritatively what our competitors were paying."

Proceeding, it was stated that the wages paid to broad-loom weavers in that shed during the whole of 1912 and 1913 had averaged 22s. 6d. ($5.47) per week. That was without making allowance for holidays, for learners, for looms standing through illness or changes, or any other reason. Individual weavers had earned as much as 30s. ($7.30) to 36s. ($8.76) each per week. Others could have earned as much if they had wanted to, but it was believed that the high rate paid had militated against production and caused less work to be done.

In conclusion, the firm points out that most orders were received from abroad, and were arranged for before the war commenced. It is not expected that the strike will affect other departments of the factory, which employs several hundred hands.

South Carolina, Laurens. Some departments of the Watts Mills are running overtime to keep up with orders.

AN ATLANTA OFFICE

The Goulds Manufacturing Company, one of the largest manufacturers of triplex, centrifugal, hand and spray pumps, has announced the opening of a new office in Atlanta, Ga. This office will be located in the Third National Bank Bldg. and will be in charge of O. B. Tanner, District Manager.

SPHINX SIZE

The Sphinx size, manufactured by The Arabol Mfg. Co., 100 William St., New York City, is recommended for sizing wool and shoddy. It is a heavy liquid and easily applied.

DISTRIBUTING FLOUR

The Monument Mills of Housatonic, which for the past 14 years have annually presented to each family represented by an employe, a barrel of flour, are now distributing 350 barrels of Washburn & Crosby's Gold Medal. The flour, which is the best made, arrived in Housatonic yesterday and today the company's teams were kept busy delivering the presents. While a number of mills throughout the country that have made it a custom to give presents at Christmas to their employes, have not done so this year, owing to the business depression throughout the country, the Monument Mills have very generously remembered their employes, and it is needless to say the latter fully appreciates the company's generosity.

NEW AGENT

The firm of G. Josephy's Erben, Bielitz, Austria, have appointed Herman H. Lehnert, who has been in the employ of this concern for several years, to settle their matters and take charge of their agency for United States and Canada. Their former agent, Felix Brecher, of Philadelphia, has severed connections with this firm owing to the increased activity in his other lines of business. Mr. Lehnert's address, until further notice, will be 201 Mariner & Merchant Bldg., Philadelphia, Pa.

TREASURY DECISIONS

T. D. 34929. November 27, 1914. Lithographic print of an oil painting on cotton cloth not a work of art. Paragraph 376 of the act of 1913 provides for works of art, including paintings in oil or water color, etc., or copies, replicas, or reproductions thereof. A lithographic print of an oil painting is not a work of art, nor is it even a copy of a painting in oil, within the meaning of said paragraph. To measure up to the standard of a work of art, a copy thereof should be a literal imitation or duplicate of the original.

T. D. 34930. November 28, 1914. Embroidered hosiery. Embroidered stockings, hose or half hose are dutiable under paragraph 358, act of 1913, as "wearing apparel . . . embroidered . . . by whatever name known," and not under paragraph 260 as "stockings, hose and half hose," etc. The use of the phrase "by whatever name known," indicates the purpose of Congress to make the provision for embroideries in paragraph 358 so specific and all inclusive that it will include articles of the character therein specified, whether they are mentioned by name in another paragraph of the act or not.

T. D. 34949. November 30, 1914. Jacquard woven cotton cloth. Appeal directed from decision of the Board of United States General Appraisers of Oct. 21, 1914, G. A. 7618 (T. D. 34858), involving the classification of dress goods and shirtings woven on a Jacquard loom.

T. D. 34950. December 1, 1914. Crash toweling. Appeal directed from decision of the Board of United States General Appraisers of Oct. 7, 1914, G. A. 7608 (T. D. 34818), involving the classification of crash toweling in chief value of flax.

T. D. 34960. December 3, 1914. Drawback on artificial silk. T. D. 26684 of August 30, 1905, extended to cover dyed artificial silk redyed by the William Teschemacher Co., of New York, for the account of M. L. Eckstein & Co., New York.

T. D. 34963. December 7, 1914. Drawback on dyed silk piece goods. Drawback on silk piece goods imported in the gray, exported after being dyed for the account of S. Yajima, of New York, by Alfred Crew, of Patterson, N. J.

T. D. 34968. December 3, 1914. Lambrequins. In the absence of proof to show that lambrequins fall within the class of articles commonly known and recognized in trade and commerce as "curtains", lace lambrequins are properly dutiable as lave articles at 60 per cent. ad valorem under paragraph 358, tariff act of 1913, and not as curtains. In the matter of protests 736189, etc., of Max Scheuer & Bros., against the assessment of duty by the collector of customs at the port of New York.

T. D. 34985. December 15, 1914. Knitted wool caps, ornamented. Children's knitted wool caps ornamented with rosettes on each side composed of silk ribbon dutiable as wearing apparel at the rate of 35 per cent. ad valorem under paragraph 291 of the tariff act.

T. D. 34997. December 14, 1914. Mohair waste. Mohair waste "ejusdem Generis" with wool waste. Paragraph 651 of the tariff act of 1913, provides specifically for wool waste. Its general provision, therefore, for "all other waste not specifically provided for", more specifically applies to mohair waste that does the general provision for "waste not specifically provided for" in paragraph 384. In the matter of protest 748490 of A. H. Ringk & Co. against the assessment of duty by the collector of customs at the port of New York.

Wisconsin, Beloit. Reports that the Beloit Glove & Mitten Company would install knitting machinery for manufacturing sweaters and fancy knit goods are denied by the concern. They state that they are not manufacturing knit goods, but are simply jobbing them the same as they always have.

Recent Textile Patents

AIR-DYEING of Fabrics and Fibers with Anilin-Black by Oxidation. 1,119,075. Hartley Fletcher, Thaon-les-Vosges, France.

BELT FABRIC, Athletic. 1,119,944. Lewis A. Fritsch, Cincinnati, O.

BOBBIN-WINDING Mechanism, Automatic. 1,121,091. James P. Hooper, Germantown, Pa.

CARDING MACHINE Attachment. 1,121,362. Thomas D. Holden, Winooski, Vt.

DYEING APPARATUS. 120,644. Joseph Benosch, Amsterdam, N. Y.

DYEING MACHINE. 1,121,064. Joseph Benosch, Amsterdam, N. Y.

DYEING MACHINE. 1,120,899. William W. Brown, Amsterdam, N. Y.

DYEING STRAW, Etc., Vat for. 1,121,023. August Kluge, Brooklyn, N. Y.

DOFFER. 1,121,535. Burt A. Peterson, Rockford, Ill.

EMBROIDERY MACHINE. 1,120,722. Johann J. Knecht, Kappel, Germany.

FIBERS, Softening Textile. 1,120,730. Carl Marx, Lambrecht, Germany.

KNIT FABRIC and Knitting the Same, Seamless Tubular. 1,120,419. William E. Smith, New Brunswick, N. J.

KNITTING MACHINE. 1,119,877. Frank W. Robinson, Reading, Pa.

KNITTING MACHINE. 1,121,251. Willis A. Ingalls, Cleveland, O.

KNITTING MACHINE Needle. 1,121,287. Edison E. Randall, Kankakee, Ill.

KNITTING MACHINE, Rib. 1,120,444. Walter D. Butz, Norristown, Pa.

KNITTING MACHINE. 1,120,578. Louis N. D. Williams, Ogontz, Pa.

KNITTING MACHINE. 1,120,332. Herman Peters, Milwaukee, Wis.

KNITTING MACHINE Needle. 1,120,989. Louis N. D. Williams, Ogontz, Pa.

LOOM TEMPLE. 1,121,194. James W. Martin, Pawtucket, R. I.

LOOM. 1,120,522. Shealy L. Odell, Greensboro, N. C.

LOOMS, Picker-Check for. 1,119,764. Alonzo E. Rhoades, Hopedale, Mass.

LOOM. 1,119,372. Harry W. Smith, North Grafton, Mass.

LOOMS, Warp Stop Motion for. 1,119,539. Alonzo E. Rhoades, Hopedale, Mass.

LOOMS, Thread-Parting Mechanism for Filling Replenishing. 1,119,186. Francis A. Mills, Lawrence, Mass.

LOOM SHUTTLE Binder and Check. 1,120,026. John G. Cayten, Lowell, Mass.

RIBBON MECHANISM. 1,121,097. Marshman W. Hazen, New York, N. Y.

SPINNING and Ring-Doubling Machines, Thread Winding Apparatus for Ring. 1,121,538. Johann F. Roth, Basel, Switzerland.

SHUTTLE. 1,121,523. John Muddleton and William Middleton, New Bedford, Mass.

SEWING MACHINES, Thread Controller for. 1,120,524. Lansing Onderdonk, New York.

STOCKING. 1,119,930. Elien W. Decker, New York.

SPONGING and Shrinking Cloth, Apparatus for. 1,119,368. Hyman Peskin, Worcester, Mass.

SPINNING FRAME Doffer. 1,120,626. Burt A. Peterson, Rockford, Ill.

SPINNING or Winding Machine. 1,119,310. Herbert W. Owen, Dover, N. H.

STOCKING. 1,119,884. Jacob Samuels, New York.

SPINDLE MOUNTING. 1,119,311. John Parker, Philadelphia, Pa.

SHUTTLE. 1,119,132. Albert B. Weissenborn, Appleton, Wis.

SHUTTLE EMBROIDERY Machine. 1,119,561. Robert Zahn, Plauen, Germany.

THREAD FINISHING Machine. 1,119,171. William C. Keyworth, Paterson, N. J.

LOOMS, Warp-regulating mechanism for weaving. 1,116,400. Robert Farnworth, Bolton, England.

SEAM for sewed articles. 1,114,533. George S. Savignac, St. Louis, Mo.

SHUTTLE. 1,117,002. Jean B. Daudilin, Fall River, Mass.

SHUTTLE-threading device. 1,117,073. John E Masters, Framingham, Mass.

SPOOLING machine bobbin holder. 1,116,347. Herbert W. Owen, Dover, N. H.

SPINNING machine spindle. 1,116,844. Varild J. Robidou, Pawtucket, R. I.

STOCKING and making the same. 1,114,298. Robert W. Scott, Boston, Mass.

SPINNING screw-formed windings or curls of hair or like material, Device for. 1,114,016. Axel E. Moeller, Copenhagen, Denmark.

SPINNING frames, Machine for doffing. 1,115,564. Burt A. Peterson, Rockford, Ill.

THREAD. Apparatus for liquid treatment of hanks of. 1,116,242. James Clayton, Coventry, England.

THREAD cutting tool, Adjustable. 1,114,720. Paul E. Becker, Bridgeport, Conn.

THREAD board cleaning apparatus. 1,114,859. Howard D. Colman, Rockford, Ill.

THREAD cutting machine, Taper. 1,115,055. Lewis B. Curtis, Bridgeport, Conn.

THREAD holder. 1,116,180. Frank H. Weaver, Jamaica, N. Y.

THREAD, Waxing. 1,115,418. Clarence L. Eaton, Boston, Mass.

THREAD, Manufacture of Artificial. 1,119,155. Jacques Coenraad Hartogs, Amsterdam, Holland.

UNDERGARMENT. 1,114,540. Keeva Segal, Philadelphia, Pa.

UNION-suit. 1,116,891. Morgan Hogan, Utica, N. Y.

WARPING machine. 1,114,337. Edward E. Bradley, Stonington, Conn.

WEAVING, Machine for preparing warps for. 1,115,399. Howard D. Colman, Rockford, Ill.

WINDING machine, Ribbon. 1,114,779. Walter Lytton, Chicago, Ill.

YARN-COILER. 1,121,480. James W. Connelly, Methuen, Mass.

YARN WINDING Machine. 1,120,438. John Brooks, Philadelphia, Pa.

TRADE MARKS RECENTLY FILED FOR REGISTRATION

80,453. Bunting. Mark: Defiance. Owner: Annin & Co., New York.

80,826. Knitted underwear. Mark: Swale Brand. Owner: Ryff & Co., Bern, Switzerland.

80,836. Cotton and linen fabrics. Mark: Caut-on. Owner: California Cotton Mills Co., Oakland, Cal.

80,870. Woolen and worsted goods in the piece. Mark: YWM. Owner: Yorkshire Worsted Mills, Lenni Mills, Pa.

80,936. Cotton piece goods. Mark: Oriole. Owner: Doyle-Kidd Dry Goods Co., Little Rock, Ark.

80,966. Woolen, worsted, silk, etc., goods. Mark: "Silver Beach." Owner: George J. Geer, New York.

80,968. Woolen, worsted, mohair, etc. Mark: "Tricotine." Owner: George J. Geer, New York.

80,969. Woolen, worsted, mohair, etc. Mark: "Sun Resista." Owner: George J. Geer, New York.

80,995. Cotton piece goods. Mark: Utility. Owner: Amoskeag Mfg. Co., Manchester, Mass.

81,063. Chiffon, serges, poplins, etc. Mark: Lorraine Mfg. Co. Owner: Lorraine Mfg. Co., Pawtucket, R. I.

81,068. Silk piece goods. Mark: Qualite 1830. Owner: M. C. Migel & Co., New York.

81,199. Velvets, plushes, etc. Mark: Servitex. Owner: The Salt's Textile Mfg. Co., Bridgeport, Conn.

81,200. Velvets and plushes. Mark: Firette. Owner: Salts' Textile Mfg. Co., Bridgeport, Conn.

81,474. Silk piece goods. Mark: Paradise Owner: Strauss & Jacob, New York.

71,687. Thread and yarn. Mark: "Subsilk." Owner: Henry Myer Thread Mfg. Co., Chicago, Ill.

73,149. Men's and boys' underwear. Mark: Yurefit. Owner: Guiterman Bros., St. Paul, Minn.

73,210. Alsatian braids. Mark: D-M-C. Owner: Dollfus-Mieg & Cie, Mulhouse, Germany.

77,164. Hosiery. Mark: Dick and Dot hosiery. Owner: Taubel Bros., Philadelphia, Pa.

78,520. Overcoats, coats, etc. Mark: Made Expressly for Classy Just Value Garments, Best Retail Trade. Owner: Charles J. Goodman New York.

78,829. Articles of clothings. Mark: Astra. Owner: Frederick Doble & Sons, London, England.

80,131. Linen piece goods. Mark: Erindale. Owner: Henry Matier & Co., Belfast, Ireland.

80,441. Cotton, linen, silk and wool piece goods Mark: Society. Owner: Rice-Stix Dry Goods Co., St. Louis, Mo.

80,588. Woolens, cotton, silk and woolen, etc. piece goods. Mark: Grakel. Owner: Grant S. Kelley, New York.

80,598. Textile rugs. Mark: Keystone. Owner: F. G. Rogers & Co., Philadelphia, Pa.

80,643. Wool tapestries, silk damasks, etc Mark: Harco. Owner: George S. Harrington Co., Boston, Mass.

80,670. Hosiery. Mark: Pathfinder. Owner: Stork Bros., Adamstown, Pa.

80,880. Coats, trousers and waistcoats. Mark: Stratmore. Owner: Bashwitz Bros. & Co., New York.

80,913. Cotton dress goods. Mark: Fire-fly Owner: Wm. Simpson Sons & Co., Philadelphia, Pa.

81,103. Satin piece goods. Mark: Paradise. Owner: Susquehanna Silk Mills, New York.

81,123. Bleached cotton sheetings, shirtings muslins, etc. Mark: Hollywood Bleachery, Pure Water Bleach. Owner: Wilson & Bradbury, Philadelphia, Pa.

81,146. Cotton piece goods. Mark: Sarco fabrics. Owner: Schwabach & Raphael, New York.

81,367. Children's and misses' coats and suits. Mark: "The House of Live Wires." Owner: Irving Finkelstein, New York.

81,391. Floss, embroidery floss, yarn, thread, etc. Mark: Brillio. Owner: The Winsted Silk Co., Winsted, Conn.

81,427. Piece goods of silk, cotton, woolen, etc Mark: Color Craft. Owner: Mannville Co., Providence, R. I.

81,492. Hosiery drying forms. Mark: Paramount. Owner: Paramount Metal Form Drying Co., Beaver Dam, Wis.

66,485. Silks in the piece. Mark: Mitchell Silks. Owner: Thomas J. Mitchell, New York.

74,329. Sewing silk, embroidery silk, etc. Mark: Silk-Craft. Owner: M. Heminway & Sons Silk Co., Watertown, Conn.

78,836. Cotton piece goods. Mark: Beachbloom. Owner: A. G. Hyde & Sons, New York.

78,941. Knit sweater coats, bathing suits, etc. Mark: Columbia. Owner: Columbia Knitting Mills Co., New York.

82,429. Hosiery. Mark: Resolute. Owner: Pasquotank Hosiery Co., Elizabeth City, N. C.

C. E. RILEY COMPANY

65 Franklin Street, .. BOSTON, MASS.

COTTON AND COTTON GOODS YARNS

DIRECT IMPORTERS OF EGYPTIAN COTTON

COTTON WOOLEN WORSTED MACHINERY

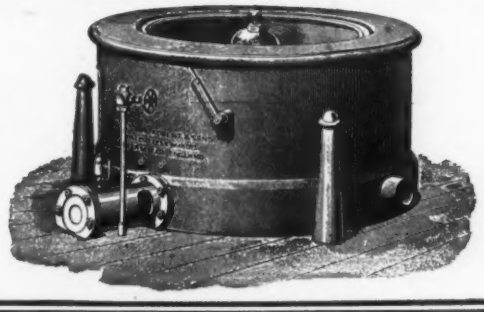
Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



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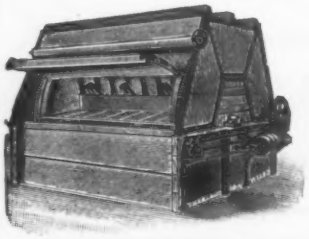

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sold on
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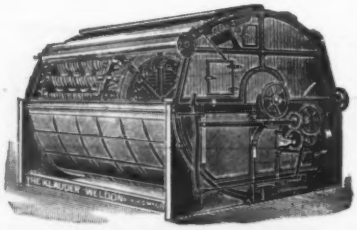
NO
RISK



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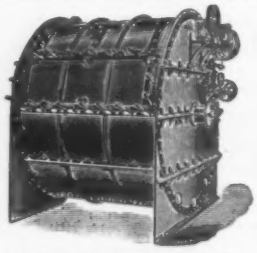
HUDDERSFIELD, ENGLAND. *AMSTERDAM, N. Y.*

Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



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Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
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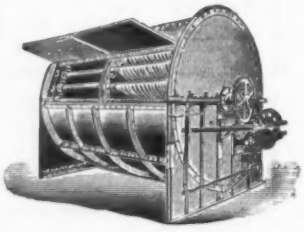
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



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GARLAND
Rawhide Loom Pickers
ARE MADE

Rawhide is extremely difficult material to work and requires much experience in handling to secure the best results. We not only have *every facility for working rawhide*, but every important process through which the picker goes is in the hands of men who have had many years' experience on the work, so that the workmanship of our rawhide loom pickers may always be depended upon for being as good as the most skilled and experienced workmen can produce.

It's economy to use Garland Pickers

GARLAND MFG. CO.
SACO, MAINE

G
TRADE MARK

Buyers' Index

This department is conducted for the benefit of our subscribers. The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under headings to which they are entitled will please notify the publishers.

Absorbent Cotton Wool Machinery.
Tatham, William, Ltd.

Air Moistening System.
——See Humidifying Apparatus.

Albone.
Roessler & Hasslacher Chemical Co.

Architects and Mill Engineers.
Cramer, Stuart W.
Dyer, W. E. S.
Ferguson, John W.
Main, Charles T.
Myrick, J. W. H.

Asbestos Covering.
Johns-Manville Co., H. W.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Saco-Lowell Shops.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Smith & Furbush Mch. Co.
Woonsocket Machine & Press Co.

Back Filling.
International Pulp Co.

Bale Presses.
Saco-Lowell Shops.

Baling Presses.
Boomer & Boschert Press Co.
Philadelphia Drying Mchy, Co.
Smith & Furbush Mch. Co.

Ballers.
Saco-Lowell Shops.

Ball Bearings.
S. K. F. Ball Bearing Co.

Bandings.
Lambeth Rope Corporation.
Sternberg, Fred, & Co.

Baskets.
Diamond State Fibre Co.
Lane, W. T., & Bro.
Standard Fibre Co.

Beamers.
Crompton & Knowles Loom Works.

Bearings.
——See Ball Bearings and Roller Bearings.

Belting.
Bond, Charles, Co.
Gandy Belting Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Hood, R. H., Co.
Johns-Manville Co., H. W.
Schieren, Chas. A., Co.
Williams, I. B., & Sons.
——See also Mill Supplies.

Belting, Leather.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belting, Link.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belt Cement.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belt Dressing.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.
Stephenson Mfg. Co.

Belt Lacing, Leather.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belt Tighteners.
Brown, A. & F., Co.
Hunter, James, Machine Co.

Bindings.
——See Tapes and Braids.

Bleaching Kiers.
Arlington Machine Works.
Birch Bros. (Albert Birch, prop.).
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
New England Tank & Tower Co.
Philadelphia Drying Machinery Co.
Stearns Lumber Co., A. T.
Textile-Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Electro Bleaching Gas Co.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co., The.
Wolf, Jacques & Co.
Worden Chemical Works.

Blowers and Blower Systems.
Autoforce Ventilating System.
Carrier Air Conditioning Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Kunze, Otto.
Leigh & Butler.
Tebbets, E. L., & Co.

Bobbin Winders.
Altemus, J. K.
Lever, Oswald, Co.
Universal Winding Co.

Boilers.
——See Steam Boilers.

Books.
Chittick, James.

Boxes, Box Shooks, Etc.
Diamond State Fibre Co.
Pearson, J. T.
Standard Fibre Co.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Brass Hinges.
Root, C. J., Co.

Bridges.
Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Cocker, M., & Co.
Felton, S. A., & Son Co.
Mason Brush Works.

Brushing Machines.
Buhlmann, A. W.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Button-Hole Machines.
Reece Button-Hole Machine Co.

Button Sewing Machines.
Union Button Sewing Co.

Calico Printers' Machinery and Supplies.
Arlington Machine Works.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Rice, Barton & Fales Mch. & Iron Works.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Taunton-New Bedford Copper Co.
Textile-Finishing Machinery Co.
——See also Dyeing, Drying, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.

Cap Spindles.
Am. Textile Specialty Mchy. Co.

Carbonizing Machinery.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Textile-Finishing Machinery Co.
Tolhurst Machine Works.

Card Clothing.
Ashworth Bros.
Atkinson, Haserick & Co.
Buhlmann, A. W.
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.

Card Feeds.
——See Automatic Feeds.

Card Grinding Machinery.
Atkinson, Haserick & Co.
Buhlmann, A. W.
Dronsfield Bros.
Firth, William, Co.
Leigh & Butler.
Riley, C. E., Company.
Smith & Furbush Machine Co.

Card Leather.
Graton & Knight Mfg. Co.

Carding Machinery.
Saco-Lowell Shops.
Smith & Furbush Mch. Co.

Card Stampers and Repeaters.
Hodgson, Walter W.

Carpet Machinery.
Altemus, Jacob K.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.
Textile-Finishing Machinery Co.

Carrier Aprons.
Graton & Knight Mfg. Co.

Castings.
Brown, A. & F., Co.
Decatur Fndry, Furnace & Mch. Co.
Fairbairn, Lawson, Combe, Barbour, Ltd.
Hunter, James, Machine Co.
Lunkenheimer Co., The.
Royersford Foundry & Machine Co.
Schofield, Wm., Co.

Caustic Soda.
Wing & Evans.

Cell Driers.
Cutter, Geo. A.

Cement Pans.
Scaife, W. B., & Sons.

Chain Belts.
Morse Chain Co.

Chains, Power Transmission.
Morse Chain Co. (Silent Driving).

Chemists.
Little, Arthur D., Inc.
Lunkenheimer Co., The.

Chenille Machinery.
Eppler's, John, Machine Works.

Clocks.
Pettes & Randall Co.
Watchman's Clock & Supply Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Richardson Brothers.
Textile-Finishing Machinery Co.

Cloth Cutting Machines.
Eastman Machine Co.
Firth, William, Co.
Weinerth Knitting & Machine Co.

Cloth Dryers.
——See Drying Machinery.

Cloth Expanders.
Arlington Machine Works.
Birch Bros. Somerville Machine Wks. (Albert Birch, prop.).
Leyland, Thomas, & Co.
Somerville Mach. Wks. (Albert Birch, prop.).

Cloth Shrinking Machinery.
Reliance Machine Works.

Alphabetical Index to Advertisers, with page numbers, follows this list.

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Perkins, B. F., & Son, Inc.
Scott, H. L., & Co.
Suter, Alfred.

Cloth Winders.
Firsching, J. A.

Clutches.
Brown, A. & F., Co.
Decatur Fndry, Furnace & Mch. Co.
Hunter, James, Machine Co.

Coal Analysis.
Little, A. D., Inc.

Collars (Shaft).
Royersford Foundry & Machine Co.

Comb Aprons.
Graton & Knight Mfg. Co.

Combs (Wool and Cotton).
Atkinson, Haserick & Co.
Crompton & Knowles Loom Works.
Firth, William, Co.
Hood, R. H., Company.
Leigh & Butler.
Riley, C. E., Company.

Commercial Vehicles.
Kissel Motor Car Co.

Compressors (Air).
Allis-Chalmers Mfg. Co.

Condensers.
Allis-Chalmers Mfg. Co.
Dean Bros. Steam Pump Works.
Dodge, C. S.

Conditioning and Testing.
U. S. Conditioning & Testing Co.

Conditioning Machines.
Buhlman, A. W.
Manufacturers Machine Co.

Cones (Paper).
Am. Textile Specialty Mchy. Co.
Pairpoint Corporation.

Conveying Systems.
Sturtevant, B. F., Co.

Conveyor Belting.
Gandy Belting Co.
Goodyear Tire & Rubber Co.

Coolers (Air).
Power Specialty Co.

Cop Machinery.
Eppler's, John, Machine Works.

Cop Tubes.
Am. Textile Specialty Mchy. Co.
Pairpoint Corporation.
——See Paper Tubes.

Copper Expansion Joints.
Badger, E. B., & Sons Co.

Copper Print Rollers.
Taunton-New Bedford Copper Co.

Coppersmiths.
Badger, E. B., & Sons Co.
Butterworth, H. W., & Sons Co.
Textile-Finishing Machinery Co.

Copper Work for Dyers.
Badger, E. B., & Sons Co.
Butterworth, H. W., & Sons Co.
Textile-Finishing Machinery Co.

Corduroy and Velvet Cutting Machines.
Firth, William, Co.

Corrugated Iron and Steel.
Scaife, W. B., & Sons.

Cotton.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.

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——See Drying Machinery.

Cotton Machinery.
Am. Textile Specialty Mchy. Co.
Ashworth Bros.
Atkinson, Haserick & Co.
Barber-Colman Co.
Brown Spin-Wright Cotton Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cramer, Stuart W.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Dixon Lubricating Saddle Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Fales & Jenks Mch. Co.
H. & B. American Machine Co.
Klauder-Weldon Dyeing Mch. Co.
Leigh & Butler.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Lowell Shops.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Stafford Co., The.
Tatham, William, Ltd.
Textile-Finishing Machinery Co.
Textile Machinery Co.
Wildman Mfg. Co.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Atkinson, Haserick & Co.
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Lowell Shops.

Cotton Softeners.
Bosson & Lane.
Harding & Fancourt, Inc.
Seydel Mfg. Co., The.
Wolf, Jacques & Co.

Cotton Waste Machinery.
Firth, William, Co.
Saco-Lowell Shops.
Smith & Furbush Mch. Co.
Tatham, William, Ltd.

Counting Machines.
Durant Manufacturing Co.
National Scale Co.
Root, C. J., & Co.

Couplings (Flexible-Insulated).
Bond Co., Charles.
Brown, A. & F., Co.

Couplings (Shaft).
Royersford Foundry & Machine Co.

Crayons.
American Crayon Co.
Lowell Crayon Co.

Credits.
National Credit Office.

Cutting Machines.
Cameron Mch. Co. (Rolling up and strip cutting).
Eastman Machine Co.
Firsching, J. A.
Perkins, B. F., & Son, Inc.
Weinerth Knitting & Machine Co.

Cylinder Oil (Superheated Steam).
Power Specialty Co.

Disinfectants.
Seydel Mfg. Co., The.

Dobbies.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.
Stafford Co., The.

Drawing Rolls.
Hood, R. H., Company.
H. & B. American Machine Co.
Metallic Drawing Roll Co.

Drinking Fountains.
Johns-Manville Co., H. W.
Rundle-Spence Mfg. Co.

Drives, Silent Chain.
Morse Chain Co.

Drying Boards.
Pearson, J. T.
Paramount Metal Form Drying Co.
Philadelphia Drying Mchy. Co.

Drying Machinery.
Arlington Machine Works.
Bailey, Frank.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cutter, Geo. A.
Decatur Fndry, Furnace & Mch. Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Sturtevant, B. F., Co.
Textile-Finishing Machinery Co.
Tolhurst Machine Works.

Dusters.
——See Wool and Waste Dusters.

Dust Collectors.
Buffalo Forge Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Dyers Clogs.
Brown, Wm., Sons.

Dyers, Bleachers and Finishers.
Aberfoyle Mfg. Co.
Brophy's, T., Sons.
Davidson, John F.
Globe Dye Works Co.
Home Bleach & Dye Works.
Hopkinson Dyeing & Textile Wks.
Lorimer's, The, Wm. H., & Sons Co.
National Silk Dyeing Co.
Peerless Co.
Utica Willowvale Bleaching Co.

Dyeing, Drying, Bleaching and Finishing Machinery.
Arlington Machine Works.
Autoforce Ventilating System.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Mach. Wks.
Buffalo Forge Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Craw, J. W., Mchny. Co.
Curtis & Marble Machine Co.
Cutter, Geo. A.
Giles, J. H., Dyeing Machine Co.
Heathcote, John, & Son.
Hunt, Rodney, Mach. Co.
Hunter, James, Machine Co.
Hussong Dyeing Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Mch. Co.
Klipstein, A., & Co.
Leigh & Butler.
Leyland, Thos., & Co.
Manufacturers Machine Co.
National Laundry Machinery Co.
Perkins, B. F., & Son, Inc.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Reliance Machine Works.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Sturtevant, B. F., Co. (Drying).
Suter, Alfred.
Textile-Finishing Machinery Co.
Tolhurst Machine Works.
Uniform Dyeing Machine Co.
U. S. Hoffman Co.

Dye House Cans.
Diamond State Fibre Co.
Hill, James, Mfg. Co.

Dye House Trucks.
Bailey, Frank.
Diamond State Fibre Co.
New England Tank & Tower Co.

Dye Kettles.
New England Tank & Tower Co.
Stearns, A. T., Lumber Co.

Dye Sticks.
Bailey, Frank
Klauder-Weldon Dyeing Mch. Co.
New England Tank & Tower Co.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Atteaux, F. E., & Co.
Badische Co.
Bayer Co., The, Inc.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Electro Bleaching Gas Co.
Farbwerke-Hoechst Co.
Ford, J. B., Co.
Geisenheimer & Co.
Harding & Fancourt, Inc.
Holliday, Read & Sons.
Innis Speiden & Co.
Johnson, Chas. A., & Co.
Kalle Color & Chemical Co., Inc.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Roessler & Hassiacher Chemical Co.
Seydel Mfg. Co.
Stein, Hirsch & Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.
Wing & Evans, Inc.
Wolf, Jacques & Co.
Worden Chemical Co.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Alphabetical Index to Advertisers, with page numbers, follows this list.

Comes this Message from the Engine Room

We cannot get enough steam

DO you ever get this message from your engineer when he finds he cannot carry the load over the peak? It's a crisis that may come to you any day—a crisis that can be avoided by installing a

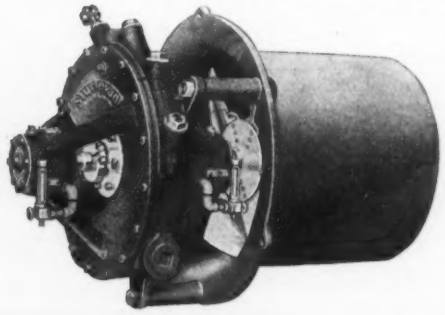
Sturtevant
REG. U. S. PAT. OFF.

Turbo Undergrate Blower

The Sturtevant gives all the draft needed—it helps hopelessly overloaded boilers—it gives additional height to stacks that are too short—it gets up steam quickly.

Have one in your plant and save the installation of new boilers.

As a starter, get Bulletin 186-T



B. F. Sturtevant Co.

Hyde Park, Boston, Mass.

and all principal cities of the world.

Selling Agents

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"The Riley Stoker"

Electrical Construction.
Allis-Chalmers Mfg. Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Heating Devices.
General Electric Co.

Electrical Supplies.
Johns-Manville Co., H. W.

Electric Driven Pumps.
Allis-Chalmers Mfg. Co.
Dean Bros. Steam Pump Works.
General Electric Co.

Electric Fans.
Allis-Chalmers Mfg. Co.
Buffalo Forge Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Allis-Chalmers Mfg. Co.
General Electric Co.

Electric Lighting.
Allis-Chalmers Mfg. Co.
Cooper Hewitt Electric Co.
General Electric Co.
Johns-Manville Co., H. W.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Allis-Chalmers Mfg. Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electrolyzer.
National Laundry Machinery Co.

Elevators.
Craig Ridgway & Son Co.
Decatur Fndry, Furnace & Mch. Co.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.
Salem Elevator Works.

Embossed Seals & Labels.
Mason, F. E., & Son.

Employes' Time Recorders.
Pettes & Randall Co.

Engines (Steam, Oil, Gas).
Allis-Chalmers Mfg. Co.
Fairbairn, Lawson, Combe, Barbour, Ltd.
International Gas Engine Co.
International Steam Pump Co.
Snow Steam Pump Plant.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.

Exhaust Heads.
Power Specialty Co.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Blake & Knowles Steam Pump Works.
Scaife, W. B., & Sons.

Feed Water Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.

Feed Water Purifiers.
American Water Softener Co.
Scaife, W. B., & Sons.

Feeds.
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Felt Rotary Washers.
Hunt, Rodney, Machine Co.

Felting Machinery.
Hunt, Rodney, Machine Co.
Smith & Furbush Machine Co.

Fender Boards.
Case Brothers.

Fibre Boxes.
Diamond State Fibre Co.
Standard Fibre Co.

Fibre Trucks.
Diamond State Fibre Co.
Standard Fibre Co.

Filters.
American Water Softener Co.
Hungerford & Terry.
Norwood Engineering Co.
Permutit Co.
Scaife, W. B., & Sons.

Finishing Compounds.
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Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.
Johns-Manville Co., H. W.

Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

Fire Hose.
Eureka Fire Hose Co.
Goodyear Tire & Rubber Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Flexible Metal Hose.
Goodyear Tire & Rubber Co.
Johns-Manville Co., H. W.

Fluted Rolls.
Firth, William, Co.
Hood, R. H., Company.
H. & B. American Machine Co.
Leigh & Butler.
Metallic Drawing Roll Co.
Riley, C. E., Company.

Flyers.
Bodden, Wm., & Son, Ltd.
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Textile Machinery Co.

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Sturtevant, B. F., Co.

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Friction Cones.
Evans Friction Cone Co.

Fuel Economizers.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Mach. Co.
Hunter, James, Mach. Co.
Kenyon, D. R., & Son.

Garnetts.
Hunter, James, Machine Co.
Leigh & Butler.
Smith & Furbush Machine Co.

Garnetted Stock.
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Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gas Engines.
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Gas Systems.
Kemp Mfg. Co.

Gaskets (Superheated Steam).
Goodyear Tire & Rubber Co.
Johns-Manville Co., H. W.
Power Specialty Co.

Gauges.
American Steam Gauge & Valve Co.
Lunkenheimer Co., The.

Gears.
Brown, A. & F., Co.
Diamond State Fibre Co.
New Process Gear Corporation.

Gear Cutting Machine.
Whiton, The D. E., Co.

Gearing, Silent Flexible.
Morse Chain Co.

Generating Sets.
Allis-Chalmers Mfg. Co.
General Electric Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Greases.
Borne, Scrymser Co.
N. Y. & N. J. Lubricant Co.
Royersford Foundry & Machine Co.

Grinding and Polishing Machines.
Royersford Foundry & Machine Co.

Hangers.
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Harness Twine.
Moore, C., & Co.

Harness and Frames.
Garland Mfg. Co.
Steel Heddle Mfg. Co.

Heating.
——See Ventilating Apparatus.

Heddles.
American Supply Co.
Atkinson, Haserick & Co.
Firth, William, Co.
Lavigne & Suter.
Steel Heddle Mfg. Co.

Hoists.
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Hoisting Apparatus.
Economy Engineering Co.
Hunt, Rodney, Machine Co.
N. Y. Revolving Portable Elevator Co.

Hose.
Goodyear Tire & Rubber Co.
Johns-Manville Co., H. W.

Hose, Pneumatic.
Goodyear Tire & Rubber Co.
Johns-Manville Co., H. W.
Parks, G. M., Co.

Hosiery Boards.
Pearson, J. T.
Paramount Metal Form Drying Co.
Philadelphia Drying Machinery Co.

Humidifying Apparatus.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Parks, G. M., Co.

Humidity Controller.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.

Hydraulic Rams.
Power Specialty Co.

Hydro Extractors.
Atkinson, Haserick & Co.
Broadbent, Thomas, & Sons.
Riley, C. E., Co.
Schaum & Uhlinger, Inc.
Schwartz, L. H. A., & Co.
Tolhurst Machine Works.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits).
Home Insurance Co.
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Jacquards.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.

Jacquard Cards.
Case Bros., Inc.

Knit Goods Dryers.
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Knit Goods, Edgings, Trimmings, Etc.
Chapin, George W.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods Finishing Machines, Crochet, Etc.
Hunt, Rodney, Machine Co.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Spindler, E. O.
Union Special Machine Co.

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Paxton & O'Neill.
Stafford & Holt.

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Acme Knitting Machine & Needle Co.
Ainslie Knitting Machine Co.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Continental Latch Needle Co.
Cooper, Charles.
Crane Mfg. Co.
Domestic Machinery Works.
Eppler's, John, Machine Works.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes Knitting Machine Co.
Lamb Knitting Machine Mfg. Co.
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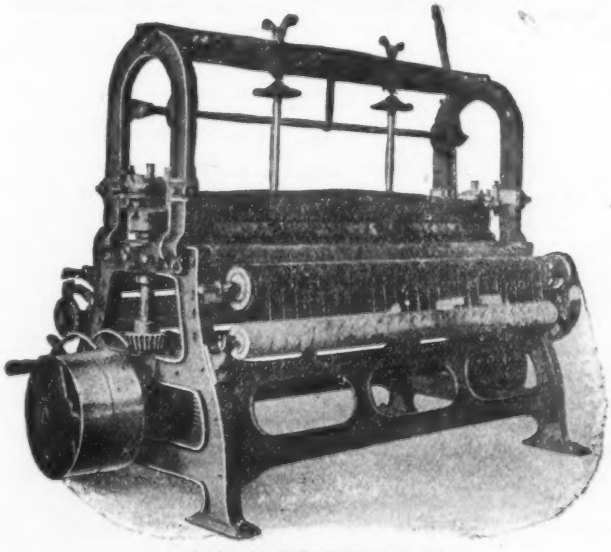

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Tompkins Bros. Co.
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Wildman Mfg. Co.

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Domestic Machinery Works.
Grosser Knitting Machine Co.
Spindler, E. O.
Textile Machine Works.
Walther, Otto.

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Acme Knitting Machine & Needle Co.
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Brinton, H., & Co.
Cooper, Charles.
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Excelsior Needle Co.
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Wardwell Needle Co.

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Westinghouse Electric & Mfg. Co.

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Garland Mfg. Co.
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Draper Company.
Leigh & Butler.
Mason Machine Works.
Richards, Atkinson & Haserick.
Saco-Lowell Shops.
Stafford Co., The.

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Hepworth, John W., & Co.
Leighton Machine Co.

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Royersford Foundry & Machine Co.
S. K. F. Ball Bearing Co.

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Lug Straps.
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Lumpers.
Dodge, C. S. (and Willowers).
Gerry, George, & Son.
Schofield, William, Co.

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Machinists' Tools.
Whiton, The D. E., Co.

Magnesia Products.
Johns-Manville Co., H. W.

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Bradley, A. J.

Mattress Machinery.
Dodge, C. S.

Measuring and Folding Machines.
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Elliot & Hall.

Mechanical Draft.
Buffalo Forge Co.
Sturtevant, B. F., Co.

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Sturtevant, B. F., Co.

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Myrick, J. W. H.
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Sturtevant, B. F., Co.

Mercerizers.
Globe Dye Works.
Home Bleach & Dye Works.
Lorimer's, Wm. H., Sons Co.

Mercerizing Machinery.
Buhlmann, A. W.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Mach. Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Textile-Finishing Machinery Co.
Wolf, Jacques & Co.

Metallic Fire-Proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Metallic Rolls.
Metallic Drawing Roll Co.

Mill Architects.
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Mill Builders and Engineers.
Dean, F. W., Inc.
Ferguson, John W.
Main, Charles T.

Mill Piping.
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Mill Supplies.
American Supply Co
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Bond, Charles, Co.
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Kunze, Otto.
Lane, W. T., & Bro.
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Pairpoint Corporation.
Philadelphia Drying Machinery Co.
Powell, Wm., Co.
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Millwrights.
Brown, A. & F., Co.
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Non-fluid Oils.
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Borne, Scrymser Co.
Harding & Fancourt, Inc.
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Paints.
Chaffee, Thomas K., Co.
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U. S. Gutta Percha Paint Co.

Pantagraphs for Mill Engraving.
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Paper.
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Richardson Bros.

Paper Boards.
Merwin Paper Co.

Paper Cones and Tubes.
Am. Textile Specialty Mchy. Co.
Pairpoint Corporation.

Patent and Trade Mark Solicitors.
Crosby & Gregory.
Heard, Smith & Tennant.
Munn & Co.

Penstocks.
Hunt, Rodney, Machine Co.
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Perforated Metal.
Allis-Chalmers Mfg. Co.
Beckley Perforating Co.

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Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Picker Pins.
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Cresson-Morris Co.
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Hunter, James, Machine Co.
Morse Chain Co. (Silent Chain).
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Royersford Foundry & Machine Co.
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Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Lowell Shops.

Preparatory Machinery (Wool and Worsted).
Smith & Furbush Mch. Co.

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Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Craw, J. W., Machinery Co.
Curtis & Marble Machine Co.
Phila. Drying Machinery Co.
Reliance Machine Works.
Royersford Foundry & Machine Co. (also Trimming Presses).
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Spence & Rideout.
Textile-Finishing Machinery Co.
U. S. Hoffman Co.
Woonsocket Machine & Press Co.
Worthington, Henry R.

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Case Bros., Inc.
Diamond State Fibre Co.

Press Papers.
Merwin Paper Co.
Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Printing Machinery.
Rice, Barton & Fales Mach. & Iron Works.

Pulley Covering.
Graton & Knight Mfg. Co.

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Dean Bros. Steam Pump Works.
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Goulds Mfg. Co.
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Norwood Engineering Co.
Permutit Co.
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Quillers.
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Payne, G. W., & Co.
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Rag Pickers.
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Taunton-New Bedford Copper Co.
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Birch Bros., Somerville Mach. Wks.
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Smith, Drum & Co.
Textile-Finishing Machinery Co.

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American Diamalt Co.
Arabol Mfg. Co.
Corn Products Refining Co.
Keever Starch Co.
Malt-Diastase Co.
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Spindles.
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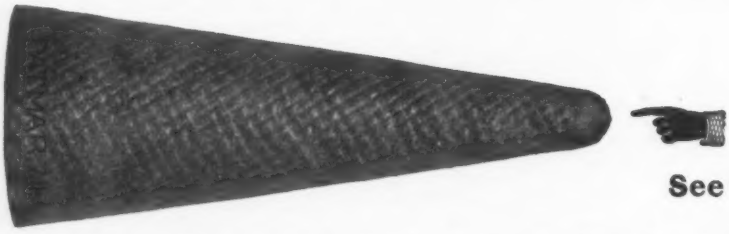

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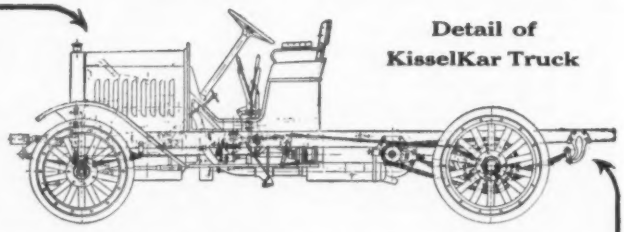

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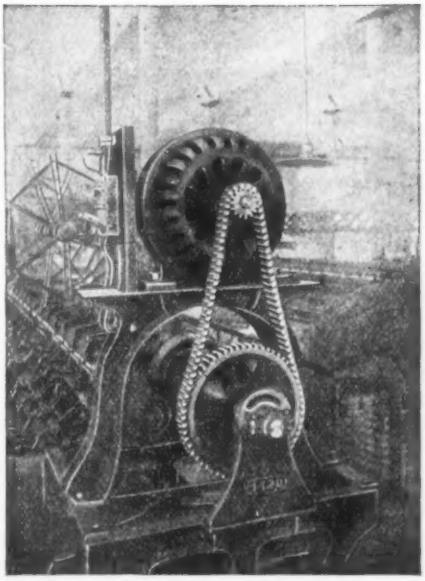

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Publishers' Page

Here's to You—and 1915

The publishers and staff of the Textile World Record extend sincere good wishes for a Happy and Prosperous New Year to all subscribers, advertisers and friends.

Service to the textile trade is the basis of our business. Much has been done by our organization in this line, during 1914, for the benefit of the industry. More will be done, in 1915, and we urge you to call upon us to serve you and the industry with advice, counsel or technical help in any way that will help to promote a Prosperous New Year for you and the textile trade.

Thank You

To our subscribers and advertisers we extend our sincere thanks for the gratifying evidences of appreciation that have come to us in the past year in the form of new subscriptions and new advertising orders. Especially, however, do we extend thanks to those who have renewed their subscriptions and their advertising orders, some of these being old friends that we have had the pleasure of serving for more than a score of years and to whose recommendations are due in many cases the addition of new friends and customers.

The Textile World Record has always tried to make itself more and more deserving of recognition and appreciation and is ready to make still more vigorous efforts in 1915 to be worthy of the position that it holds in the textile industry.

As pointed out on this page in the December issue nine new advertisements appeared in the November issue, nine in December, and at this writing we have on hand for this issue new orders for seven advertisements. Of these, two are for full pages every month; two are for half pages; three for quarter pages or less in each issue. In addition to these, five of our old advertisers are taking increased space in this number.

Because of present conditions abroad many men of recognized business acumen and financial standing have predicted a big boom for the United States in 1915. If we are to have a period of better business in general the textile business will inevitably respond to the boom as textiles are a universal necessity. We sincerely hope that you will get a generous share of the benefits of this looked for improvement in business.

"Best Textile Paper Published"

Itasca, Tex.

Lord & Nagle Co.

Gentlemen: I am unable to make any suggestion that would improve the Textile World Record as all the important subjects are already covered by it. In a case like the European war every mill man wants to know what will be its immediate and future effects upon the cotton mill industry in this country and I believe that the last issue covered that as fully as was possible at the time. I regard it as the best textile paper published.

J. E. Nation.

Why it Pays to Advertise in the Textile World Record

The following is quoted from one of the daily reports of a Textile World Record representative:

"I met a salesman for Messrs. —— today who told me that when calling on one of his customers, a large Philadelphia textile manufacturer, he saw a copy of the Textile World Record on his desk and asked the man what he thought of it? This manufacturer told him that it was the best textile magazine published; that he went over its advertising pages in the most thorough manner, that it kept him posted on all the new textile appliances for use in his plant; and that without it he would not know where he stood."

Monthly Circulation Statement

Of this edition over 6,200 copies are printed and all are needed.

The Textile World Record is a Member of the Audit Bureau of Circulations.

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"No-Waste"
Seamless Hard Fibre
Roving Can

It does not have the riveted seam that strains and breaks the sliver

NO SEAMS OR RIVETS

ABSOLUTELY SMOOTH

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Fibre and Steel Clad Cars
Doffing Trucks
and
Mill Boxes All Kinds

Sheet Fibre Tubes
Rods
Special Shapes

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25 Miller Street, Somerville, Mass.

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Machinery

We supply complete plants for :

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on *English* and *Continental* Systems.

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Wadding Machinery.
Absorbent Cotton Wool Machinery.
Engine Waste Cleaning Machines.
Rag Tearing Machines.
Cotton Blanket Plant.
Gun Cotton Machines, etc., etc.

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AGENT:
Wm. Firth, 200 Devonshire St., Boston

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The Water Softener to Zero Hardness

Eliminates the source of greatest trouble and expense in every dye house, bleachery and finishing plant.

Pays for itself in a short time through savings in soap and dyestuffs, and the elimination of spoiled goods.

Increases profits by raising the quality of the product.

Write today for the new booklet, "Permutit in the Textile Industry."

zero NO HARDNESS water

The Permutit Co.
50 East 42nd Street
New York City

zero NO HARDNESS water

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Showing equivalent sizes of different systems of numbering yarn; cotton, woolen, worsted, etc., so that the sizes of different standards may be quickly compared. Also contains a number of other valuable yarn tables for designers, manufacturers and knitters. PRICE 50c. Textile World Record, Boston.

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Inventor of the
Autoforce Ventilating System
Largest Textile Ventilating Engineers in America
Boston, Mass.

Laboratory Manual of Dyeing and Textile Chemistry—*Matthews.*

The method of presentation and the subject matter are the outcome of a number of years teaching on the part of the author. An elementary manual to be used in conjunction with the more general treatises on the subject. 183 experiments; test questions; 360 pages; cloth. **PRICE $3.50 PREPAID.**
Catalogue of Textile Books sent free.

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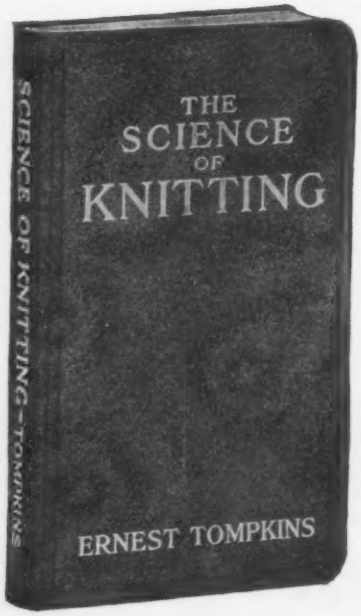

The Science of Knitting

BY
ERNEST TOMPKINS

330 Pages, Illustrated *Price $3.00 Postpaid*

Some of the contents are—

Yarn Numbering and Calculations; Elements of Knitting; Formulas for Ribbed Fabrics; Width of Tubular Goods for Different Numbers of Needles and Yarns; Width of Fabrics from Different Machines; Production of Circular Knitting Machines; Weight of Goods; Twist in Knit Fabrics; Set; Space Allotment in Knitting Mills; Knitting Machine Gauges; Range of Fabrics from the Same Gauge or Cut; Burs; Spring Needle Latch Wheel Tuck Stitch Figures; Vertical Patterns in Latch Needle Work; Cams; Inserting Needles in Ribber; Take-Up; Locating Source of Trouble in Knitting; Designing with Pattern Wheels; Theory of Knit Fabrics; Ratio and Proportion; Weights and Measures; Mensuration; Miscellaneous Notes on Belting; etc.

In addition there are 60 illustrations and 75 tables of yarns, fabrics, machinery and productions.

The volume is of convenient size, is a model of typographical arrangement, well printed and bound in blue leather with gold lettering.

LORD & NAGLE COMPANY
144 Congress Street, Boston, Mass.

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Elimination of Wastes

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Fuel Economy and Smoke Abatement
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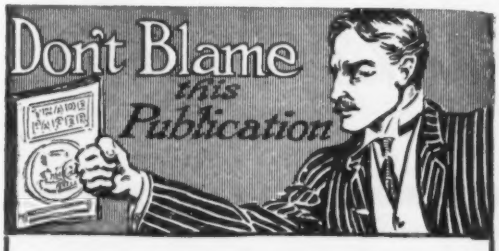
Remodeling Power Plants
Steam Turbine Installation

93 Broad Street - - - Boston, Mass.



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The reorganization of textile and industrial plants is a highly developed function.

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CHARLES T. MAIN
Mill Engineer and Architect
201 Devonshire St., Boston, Mass.
4-25

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If you have an invention which you wish to patent you can write fully and freely to Munn & Co. for advice in regard to the best way of obtaining protection. Please send sketches or a model of your invention and a description of the device, explaining its operation.

All communications are strictly confidential. Our vast practice, extending over a period of nearly seventy years, enables us in many cases to advise in regard to patentability without any expense to the client. Our Hand-Book on Patents is sent free on request. This explains our methods, terms, etc., in regard to ***Patents, Trade Marks, Copyrights,*** etc.

All patents secured through us are described without cost to the patentee in the *Scientific American*

MUNN & COMPANY, *Solicitors of Patents*
390 Broadway, New York and 625 F St., Washington, D. C.

Money-Saving, Money-Making Opportunities

WANTS, FOR SALE, ETC.

This is a special department for those who wish to buy or sell second-hand machinery, mills or mill sites, patents, etc., and for such advertisements as "Help" or "Situations Wanted." A special low rate is charged, viz., $1.00 for one-half inch, single column; $2.00 for one inch, single column, and in the same proportion for larger space. By measuring these advertisements and counting the words you will see what space is needed for your announcement. No advertisement accepted for less than $1.00. Remittance should accompany the order. No extra charge for forwarding replies sent in care of the Textile World Record.

Address: Want-Ad Dept., Textile World Record, 144 Congress Street, Boston, Mass.

Manager or Superintendent Knit Underwear Mill Desires Position

22 years' experience in the practical manufacture of men's, women's and children's cotton and wool, ribbed and flat underwear from raw stock to finished garment. Thorough executive in managerial capacity. Best references.

Address "Executive," Textile World Record, Boston, Mass.

FOR SALE CHEAP

2 second-hand Crawford Double Screw Power Presses

with hollow steam plates, suitable for hot and cold pressing worsteds, woolens, hosiery and underwear. Also one Crawford Baling Press. For further particulars apply to

SPENCE, & RIDEOUT, Nashua, N. H.

Underwear Manufacturer

now employed, would consider change.

Wants position as

Manager or Superintendent.

Fifteen years experience with two of best mills in this country. Highest references. Address "Underwear Mfr.," care of Textile World Record, Boston, Mass.

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LOGS

of The Best Quality

For Bleaching, Dyeing and Printing Rollers. Prompt delivery in any quantity. All consignments made direct from Adirondack Woods. Write for prices.

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HARDING & FANCOURT, Inc.

Kensington Soap Works

Soaps of Quality, Turkey Red Oil, Tuscan Softener
Soluble Oils and Olive Oil

516-18 So. Delaware Ave. PHILADELPHIA

For Sale--Continuous Crabb

Four-bowl, 70″ x 12″ rolls; 5″ brass rollers in tanks, wooded 3″ cypress; clutch driven; complete with folder and ratchet tension. Perfect condition. **New in April, 1914.** Owners changing to English system. Address "Crabb," Textile World Record, Boston, Mass.

New Tacking Machine for Sale

Birch Bros. make, purchased last October, practically brand new, but not adapted to our needs.

WILL SELL AT A BARGAIN

WILTON WOOLEN COMPANY, - WILTON, ME.

FOR SALE

5 Camless Coners

16 spindles each, first-class condition. Suitable for any kind of yarn. Address "Coners," Textile World Record, Boston, Mass.

A VALUABLE BOOK

Textile Design

Pure and Applied

BY

THOMAS WOODHOUSE and THOMAS MILNE

Price $3.25, All Charges Prepaid

PRACTICALLY every important type of textile fabric is illustrated and described in this work, beginning with the plain weave and going through ply fabrics, pile fabrics to silk picture designs and fabrics. Contains 307 illustrations embodying over 1400 different designs, plans and photographic reproductions.

LORD & NAGLE COMPANY

144 Congress St., Boston

New free catalog of all textile books in the English language now ready.

WANTED: POSITION

As Wadding Mill Manager

Any Company thinking about going into the Wadding business will find it of interest to consult me first. I have had fifteen years experience with Independent Wadding Companies in Massachusetts, Rhode Island, Tennessee, Alabama and Georgia. I have all the plans and specifications to start a Wadding Mill from the foundation of the building to the manufacturing of the finished product, and can furnish the very best of references. For further information address, George M. Miller, 616 Smithfield Ave., Saylesville, R.I.

Position Wanted by an Expert Carder and Spinner as Assistant Superintendent in Knitting or Woolen Mills. Understands those branches from A to Z along with the twisting, cone winding and spooling. Is first-class in manipulating stock to get the most profitable results at lowest cost. Capable of setting up the machinery in modern ways. Even yarn, good production, and first class efficiency. 25 years experience. All enquiries to be addressed to "Expert Carder," care Textile World Record, Boston, Mass.

Textile Draftsman and Designer open for engagement. Graduate Mechanical Engineer who has had practical experience on textile machinery in mills and shops. Specialized in worsted spinning at Lowell Textile School. Inventive ability. Best of references. Address "Draftsman," care Textile World Record, Boston, Mass.

Wanted a Lease of Mill

containing 4 to 8 sets woolen cards and mules. Mass. preferred. Address "Lease," Textile World Record, Boston, Mass.

WANTED

Man to Act as Superintendent of a Small Hosiery Mill

Must have experience in manufacture of men's and women's cotton and silk seamless hosiery. A man with a little capital will be given a small interest in the business. A wonderful opportunity for a capable, ambitious man. Address Northampton Hosiery Co., Northampton, Mass.

FACTORY LIGHTING by CLEWELL

By Clarence E. Clewell, formerly Lighting Expert, Westinghouse Electric & Manufacturing Co., now of the Electrical Engineering Department, Sheffield Scientific School, Yale University. 160 pages, 6 x 9; 100 illustrations. Published August, 1913. $2.00 (8 x 4) net, postpaid.

Based on wide experience, it gives records to show: What Kind of Lights to Use in Different Rooms—How to Arrange Them—How Many to Install.

It emphasizes the importance of good lighting as a part of the equipment necessary in successful manufacturing.

There has been heretofore no similar book covering the practical questions of factory lighting.

It covers: I. General Items and Requirements. II. Illumination Design. III. Lighting Installation Work. IV. Lighting Maintenance Records. V. Office Lighting. VI. Drafting Room Lighting. VII. Factory Lighting. VIII. Power House Lighting. IX. Iron and Steel Mill Lighting. X. Machine Tool Lighting.

LORD & NAGLE CO., 144 Congress Street, Boston, Mass.

The Logical Place To Advertise Second-Hand Machinery

The Textile World Record carries more advertising of textile machinery, equipment and supplies than any other textile periodical. Very many of its 400 advertisers use no other.

The reason for its continued success as an advertising medium for the sale of textile machinery is that:

Its subscribers buy about $250,000,000 worth of textile machinery, equipment, and supplies (not including raw material) each year.

Being so successful for new machinery it should also prove profitable for the advertising of second-hand machinery, and for the sale of anything of special interest to men in the mill who are held responsible for results, e. g., mills, power-plant equipment, supplies, etc.

Therefore, if you have any textile machinery, mill or power-plant equipment that you do not intend to use again, the Textile World Record offers you the best market for its disposal at a fair price. An advertisement this size costs only $16.00 an issue. For further information address:

Classified Advertising Department

Textile World Record 144 Congress Street Boston, Mass.

Situations Wanted

Manufacturers who are in need of Superintendents or Overseers for any department of mill work may learn of suitable men upon application by mail or telephone to C. T. DONLEVY, care Textile World Record, 144 Congress Street, Boston., who will give prompt attention to their requirements without charge.

Master Mechanic; has worked on all kinds of worsted and woolen machinery; both vertical and horizontal tubular boilers; engines both Corliss and slide valve; pumps; both A. C. and D. C. motors and generators; 33 years of age, married; will not go West or to Canada; good reference.
6348, Textile World Record, Boston, Mass.

Master Mechanic; has worked on all makes of cotton and worsted machinery; 44 years of age; married; will not go to Pa., N. J., West or South; good reference.
6349, Textile World Record, Boston, Mass.

Overseer of Dyeing or bleaching in cotton mill; has worked on cotton piece goods, dress goods, lawns and bunting; familiar with jigs, padders, reds, clarets and indigo dyeing; 26 years of age; will not go West, South or to Canada; good reference.
6350, Textile World Record, Boston, Mass.

Superintendent of small woolen mill; would consider position as assistant superintendent of large mill; has worked on all classes of Scotch tweeds, fancy vestings, jacquard work, all wool white blankets, also shoddy grey blankets, steamer rugs, large variety of double cloth cloakings, basket cloth, worsted trouserings and suitings, mackinaws, blanket cloths, fancy homespuns, etc.; familiar with all the leading English makes of machinery; 32 years of age; good reference.
6351, Textile World Record, Boston, Mass.

Designer, superintendent and designer of worsted mill; would consider position of salesman of mill supplies or worsted yarn; has worked on fine and medium fancy worsteds, men's wear also resist and cross dye worsteds; familiar with all worsted and woolen weaving and finishing machinery; 31 years of age, married; will not go South; good reference.
6352, Textile World Record, Boston, Mass.

Loom Fixer or boss weaver in woolen mill; has worked on all classes of goods; familiar with Crompton & Knowles looms; 49 years of age; married; will not go to N. J., West, South or to Canada; good reference.
6353, Textile World Record, Boston, Mass.

Designer in Woolen Mill; has worked on men's wear, woolen, shoddy and worsted; natural and piece dyes; is familiar with goods, bookkeeping and organization; familiar with different makes of machinery; 26 years of age; good reference.
6354, Textile World Record, Boston, Mass.

Moquette or axminster manager or boss weaver; has worked on axminster, chenille, jacquard and tapestry carpets; familiar with English and American machinery; 41 years of age, married; good reference.
6355, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on all grades of yarns and harding felts; familiar with Davis & Furber and Lombard machines; 37 years of age, married; good reference.
6356, Textile World Record, Boston, Mass.

Superintendent of worsted yarn mill; has worked on all kinds of worsted yarns for weaving and knitting; familiar with all makes of worsted machinery; 47 years of age, married; will not go West, South or to Canada; good reference.
6357, Textile World Record, Boston, Mass.

Boss Weaver; has worked on cottons, woolens, worsteds, both men's wear and dress goods; plain and fancy; asbestos, textiles and packings; familiar with Knowles, Crompton & Thayer or Schaum & Uhlinger looms; 32 years of age, married; will not go to Canada; good reference.
6358, Textile World Record, Boston, Mass.

Overseer of Carding and combing in cotton mill; has worked on carded and combed Sea Island and Egyptian cotton from 40s to 150s ring and mule spun; American reelers from 20s up for both hosiery and sewing thread and crocheting trade; familiar with Saco, Lowell, Howard & Bullough, Whitin, Hetherington, Platt, Dobson & Barlow, Woonsocket, Potter & Johnson machines; 32 years of age, married; good reference.
6359, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; has worked on cloakings, overcoatings, dress goods, flannels, shirtings and hosiery yarns; familiar with Davis & Furber, Lombard, Cleveland, Smith and Tainter machines; 30 years of age, married; will not go to Me., Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6360, Textile World Record, Boston, Mass.

Assistant Designer or superintendent in a cotton or woolen mill, either jacquard or dobby work; would accept position in a wholesale woolen house; familiar with cotton and woolen calculations, also analytical work; 25 years of age; Philadelphia Textile School graduate; experience considered before salary; good reference.
6361, Textile World Record, Boston, Mass.

Repair Man in mechanical department; 35 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6362, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; has worked on all kinds of mixes and waste, both cotton and woolen, also silk; familiar with Davis & Furber, Johnson & Bassett and James Smith machines; 38 years of age; married; good reference.
6363, Textile World Record, Boston, Mass.

Overseer of Spinning in worsted yarn mill; has worked on worsteds and jute; familiar with all worsted machinery of Bradford system and all jute machinery; 32 years of age, married; good reference.
6364, Textile World Record, Boston, Mass.

Master Mechanic or mechanical engineer; would like position where he would have the supervision of the mechanical construction, power transmission, ventilation and heating work; could design any special machinery required, improvements and attachments to present machinery; 30 years of age, married; will not go to Canada; good reference.
6365, Textile World Record, Boston, Mass.

Second Hand of Carding or boss comber in cotton mill; has worked on fine and coarse yarns; familiar with all Whitin card room machinery; Woonsocket speeders; Howard & Bullough, drawing and pickers; Dobson & Barlow and Kitson pickers and Hetherington cards; 21 years of age; good reference.
6366, Textile World Record, Boston, Mass.

Second Hand in finishing department in woolen mill; has worked on serge dress goods, serge and alpaca linings, also Palm Beach cloth; 30 years of age, married; will not go to Pa., West, South or to Canada; good reference.
6367, Textile World Record, Boston, Mass.

Assistant Superintendent in knitting mill; has worked on silk, cotton and woolen half hose and full fashioned hose, also ladies' ribbed underwear; familiar with all kinds of hosiery machinery and Scott & Williams underwear machinery; 22 years of age; good reference.
6368, Textile World Record, Boston, Mass.

Overseer of woolen or worsted finishing; has worked on fancy worsteds and piece dyes, broadcloths, kerseys, meltons, zibelenes, double cloth, teddy bear cloth, unions and cotton warp woolens, chinchillas, smoking jackets, coverts, cap cloths, bedford cords, etc.; familiar with all makes of finishing machinery; 29 years of age; married; will not go to N. J., West, South or to Canada; good reference.
6286, Textile World Record, Boston, Mass.

Sewing Machine Adjuster; has worked on balbriggan and ribbed goods; familiar with Merrow, Union Special, Willcox & Gibbs, overlock, Union button, Singer button and Singer button-hole machines; 35 years of age; good reference.
6287, Textile World Record, Boston, Mass.

Superintendent of small spun silk mill, assistant superintendent of large mill; would consider position of overseer of drawing, etc., in good mill; has worked on spun silk yarn; familiar with Lowell, Green, Schlunsberger, Greenwood & Battey, Universal winding and Alsacetion combers; 31 years of age; married; will not go South; good reference.
6288, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on worsted, Axminster, Ingrain and woolen yarns; 40 years of age; married; good reference.
6289, Textile World Record, Boston, Mass.

Secondhand, overseer or superintendent of dyeing; has worked on woolen, cotton and linen yarns; familiar with Klauder-Weldon machines; 25 years of age; married; good reference.
6290, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all classes of woolen and worsted goods; familiar with all makes of woolen and worsted looms, Crompton & Knowles, fancy, automatic and dobby, Crompton & Stafford fancy and Mason dobby looms; 33 years of age; married; will not go South; prefers New England or Canada; good reference.
6291, Textile World Record, Boston, Mass.

Cotton Mill Superintendent; has worked on all classes of goods from coarse baggings to fine silk jacquards; familiar with all American makes of machinery; 27 years of age; married; good reference.
6292, Textile World Record, Boston, Mass.

Overseer of Carding or carding and spinning; has worked on all kinds of carpet yarns from 1/5 of a run up to 20 cut hosiery yarns, also asbestos; familiar with Smith, Furbush, Davis & Furber and Whiting machines; 42 years of age; married; will not go to Me., N. H., Vt., South or to Canada; good reference.
6293, Textile World Record, Boston, Mass.

Superintendent or asasistant manager for mill or office or both in a textile mill, preferably knitting or spinning mill; has worked on flat and rib knit underwear, men's and women's; on spinning, woolen and cotton system; familiar with Cooper spring needle, flat needle and nearly all German makes of knitting machines; Singer, Union Special, and Merrow sewing machines; Tweedale & Smalley's cotton spinning machinery and Davis & Furber mules and cards; 26 years of age; will not go to Canada; good reference.
6294, Textile World Record, Boston, Mass.

Overseer of Spinning in woolen mill; has worked on fine suitings and overcoatings, 1 to 9 run, also knit goods, cotton mixes; familiar with Davis & Furber machines; will not go to R. I., Vt., Pa., N. J., West, South or to Canada; 46 years of age; good reference.
6295, Textile World Record, Boston, Mass.

Overseer of Ring Spinning; has worked on combed and carded, Peeler, Sea Island, cotton waste and all short stock, making from 6s to 65s knitting, hosiery, weaving and fancy yarns; familiar with Fales & Jenks spinning and twisting frames; Saco-Pettee, Saco-Lowell, Whitin, Mason, Howard & Bullough and Lowell ring spinning frames; Draper twisters and Foster winders; 28 years of age, married; will not go to Pa., N. Y., N. J., West, South or Canada; good reference.
6274, Textile World Record, Boston, Mass.

Overseer of Weaving in fancy worsted mill; has worked on men's wear and fancy worsteds for the last twenty-five years; prefers Knowles looms; 49 years of age, married; will not go South; good reference.
6275; Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on woolen, worsted and cotton; familiar with Knowles, Crompton and jacquard looms; 50 years of age, married; will not go West, South or to Canada; good reference.
6280, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on all kinds of woolen goods and wool, shoddy and cotton mixes; familiar with Davis & Furber, Lombard and Cleveland machines; 41 years of age, married; will not go West, South or to Canada, good reference.
6278, Textile World Record, Boston, Mass.

Overseer of Dyeing in cotton mill; would take second hand position; has worked on every class of cotton goods, sateens, burlap, bunting, cotton flannels, denims, ratine, artificial silk, alpaca, mohair and unions; familiar with dyeing, bleaching and finishing machinery; 23 years of age; good reference.
6341, Textile World Record, Boston, Mass.

Superintendent or designer in woolen mill; has worked on fancy woolens, worsteds, piece dyes, uniform cloths, billiard cloths, flannels, kerseys, cloakings, overcoatings, etc.; 36 years of age, married; will not go South or to Canada; good reference.
6343, Textile World Record, Boston, Mass.

Boss Spinner in woolen mill; has worked on woolen goods, knitting goods, underwear, sweater yarn; union, wool and shoddy yarn, also merino yarn; familiar with Davis & Furber and Johnson & Bassett machines; 27 years of age; will not go South; good reference.
6344, Textile World Record, Boston, Mass.

Superintendent or superintendent and designer in woolen or worsted mill; has had 10 years of experience as overseer and designer; 6 years in a large mill on fancy worsteds and piece dyes, in men's wear and dress goods; good on calculations, organization and system; 40 years of age, married; good references; will not go West or South; will consider anything with definite outlook.
6345, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has colored everything in the line of worsted piece dyes, silk effects, raw stock and yarn; 50 years of age, married; familiar with all makes of machinery; good reference.
6346, Textile World Record, Boston, Mass.

Second Hand of Dyeing in woolen mill; has worked on fancy stock dyeing and pieces and indigo stock dyeing and pieces; familiar with machines making knickerbocker stock; Hunt's indigo dyeing machines with hydrosulphite vat; 22 years of age; will not go West, South or to Canada; good reference.
6347, Textile World Record, Boston, Mass.

Manager of an independent wadding company; has had a wide experience in the manufacture of wadding; 45 years of age, married; good reference.
6309, Textile World Record, Boston, Mass.

Superintendent of Woolen or worsted mill; has worked on overcoatings, cheviots, low and high grade cassimeres, skein and piece dye worsteds; familiar with Davis & Furber cards; Johnson & Bassett mules and Crompton & Knowles looms; 50 years of age; married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6314, Textile World Record, Boston, Mass.

Superintendent or overseer of worsted spinning mill; has worked on botany, cross bred, mohair, alpaca, colored or white and worsted yarns; familiar with open and cone drawing, cap flyer or ring spinning and twisting, reeling, warping, spooling, gassing, yarn finishing and has a good knowledge of combing; 45 years of age; married; good reference.
6315, Textile World Record, Boston, Mass.

Overseer of twisting, winding, spooling and beaming; has worked on worsted, cotton and worsted, silk and worsted goods; familiar with twisting, spooling, winding and beaming machinery; 30 years of age, married; good reference.
6221, Textile World Record, Boston, Mass.

Overseer of Cutting in underwear mill; has worked on ladies', misses' and boys' underwear in the tuck stitch and the one and one; 23 years of age, married, will not go to Canada; good reference.
6222, Textile World Record.

Second Hand of cotton carding, boss grinder or overseer; has worked on blue tinge waste to 2 inch staple and 4s to 40s yarns; familiar with Whitin and Saco cards, Kitson pickers, Whitin & Saco draw frames, Saco & Woonsocket fly frames and some knowledge of Whitin combers; 24 years of age; prefers Canada or South, but is not particular; good reference.
6243, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; has worked on all kinds of goods and is familiar with English and American makes of machinery; will not go to Me., Pa., N. Y., N. J., West, South or to Canada; 49 years of age, married; good reference.
6254, Textile World Record, Boston, Mass.

Designer; has worked on cotton, half wool and half silk goods; familiar with all machinery used in Europe; 36 years of age; married; good reference.
6255, Textile World Record, Boston, Mass.

Second Hand of Card Room in woolen mill; would consider small boss carding position; has worked on all kinds of goods; 30 years of age, married; familiar with almost all kinds of machines; good reference.
6256, Textile World Record, Boston, Mass.

Fixer on Hosiery Machines; has worked on worsted and cotton hosiery; familiar with George D. Mayo, Standard, Scott & Williams half hose machines; good reference.
6257, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on men's wear, overcoatings, cloakings, dress goods, worsted, woolen and cotton; familiar with Knowles and Crompton looms; 50 years of age, married; will not go South or to Canada; good reference.
6258, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on high and low stock, all wool and cotton mixes, shirtings, dress goods, overcoatings, suitings, mackinaws and broadcloths; familiar with all makes of American cards; 35 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6272, Textile World Record, Boston, Mass.

Designer or boss weaver in woolen mill; would consider both in small mill; has worked on worsteds and woolens; familiar with all kinds of machinery; 38 years of age, married; will not go to Pa., N. Y., N. J., West, South or Canada; good reference.
6273, Textile World Record, Boston, Mass.

Wadding Mill Manager; fifteen years' experience with independent wadding companies in Massachusetts, Rhode Island, Tennessee, Alabama and Georgia; has all the plans and specifications to start a wadding mill from the foundation of the building to the manufacturing of the finished product; good reference.
6309, Textile World Record, Boston, Mass..

Millwright or carpenter; prefers a position as foreman; 32 years of age; married; will not go to Me., N. H., Vt., Pa., N. J., West, South or to Canada; good reference.
6310, Textile World Record, Boston, Mass.

Master Mechanic; familiar with engines, generators, motors, etc.; 42 years of age; married; good reference.
6311, Textile World Record, Boston, Mass.

Assistant Designer in cotton mill; would accept a position on jacquards or any other line of goods; could assist in office work; familiar with cotton calculations, etc.; 22 years of age; textile school graduate; will not go South or to Canada; good reference.
6312, Textile World Record, Boston, Mass.

Overseer of Weaving in cotton mill; has worked on fancies, jacquards, lappetts, 3-4-5 harness twills, sateens, shirtings, chambrays, yarn from 20s to 85s, width 26 to 90 inches; familiar with Draper, Crompton, Whitin, Colvin, Mason and Stafford automatic looms; 32 years of age, married; will not go West or South; good reference.
6279, Textile World Record, Boston, Mass.

Shipper, office clerk or examiner in woolen mill; has worked on fancy woolens and worsteds, fancy dress goods, woolen and worsted piece dyes, serges, beavers, meltons, overcoatings and cloakings; 24 years of age; will not go West or South; good reference.
6316, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; has worked on everything spun on woolen mules, cotton, shoddy and wool mixes; all wool, all cotton, silk noils, etc.; familiar with D. & F. and J. & B. mules; 39 years of age; married; good reference.
6317, Textile World Record, Boston, Mass.

Overseer of Bleaching, starching or finishing; has worked on quilts, bed spreads, huck towels, Turkish towels, voils and voilettes, flannels, yarns, drills, sateens, sheetings, print and dye goods; familiar with all machines used in bleaching, starching and finishing of cotton goods; 24 years of age; will not go to Vt., or to Canada; good reference.
6318, Textile World Record, Boston, Mass.

Chief Engineer; has had a wide experience in textile mills; 37 years of age; married; will go West and to Massachusetts; good reference.
6319, Textile World Record, Boston, Mass.

Woolen or Worsted Cloth Designer or assistant superintendent; has worked on all classes of men's wear in fancy worsteds and woolens, army cloths and dress goods; 28 years of age; will not go West or South; good reference.
6320, Textile World Record, Boston, Mass.

Agent of Woolen Mill; would consider any executive position in textile mill from designer to agent; has worked principally on worsted men's wear and dress goods, also men's wear woolens; will not go West or to Canada; 38 years of age; married; good reference.
6321, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all classes of worsteds and woolens; prefers Knowles looms; 42 years of age; married; will not go to Me., N. H., Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6322, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen or worsted mill; has worked on coarse and fine woolens, worsteds, serges, cloakings, overcoatings, broad cloths, men's wear and women's wear fabrics; familiar with all makes of finishing machinery; 50 years of age; will not go West or South; good reference.
6323, Textile World Record, Boston, Mass.

Superintendent of cotton mill or boss carder in large mill; has worked on white, colored, plain and fancy carded and combed yarns and goods; familiar with American and English makes of machinery; 43 years of age; married; will not go South; good reference.
6324, Textile World Record, Boston, Mass.

Second Hand of Dyeing in woolen mill; has worked on ladies' dress goods, all kinds of silk effect piece dyes, serges, chinchillas, cotton cross dyes, raw stock, all kinds of worsted yarn dyes and rain cloth; familiar with Rodney Hunt and Klauder Weldon machines; 23 years of age; married; good reference.
6325, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on men's wear, ladies' dress goods, thibets, broad cloths, uniform goods, and balmacaans; familiar with Klauder, Weldon, Delahunty and Gessing yarn machines; 25 years of age; will not go to Pa., N. J., West, South or to Canada; good reference.
6326, Textile World Record, Boston, Mass.

Designer or assistant in worsted mill; has worked on worsteds, piece dyes, naturals, men's wear and dress goods, cotton worsteds, and all the different grades from fine domestic to 1/4 blood, also a little on woolens; 23 years of age; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6327, Textile World Record, Boston, Mass.

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Outline of Contents

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Chapter I. Substances for Giving Adhesive Properties to the Size.
Chapter II. Materials Used for Giving Weight and Body to the Size and Yarn.
Chapter III. Ingredients Used to Soften the Size and Yarn, Oily and Greasy Substances.
Chapter IV. Soaps – Manufacture of – Analysis of – Use in Sizing.
Chapter V. Substances Used for Softening and for Giving Weight and Strength.
Chapter VI. Ingredients Used for Preserving Size from Mildew.
Chapter VII. Size Mixings, and the Methods and Plant Employed in Mixing Size – Size Mixings Which Cause Tendering.
Chapter VIII. Sizing – The Slasher – The Slasher Tender.
Chapter VIIIA. Pure Sizing – Medium and Heavy Sizing – Colored Sizing.
Chapter IX. Ball or Warp Sizing.
Chapter X. Hank Sizing and Bleaching.
Chapter XI. The Preparation of the Yarn for Weaving and the Testing of Sized Yarn.
Chapter XIII. The Analysis of Sized Grey Cloth.
Chapter XIV. Damage to which Sized Cloth is Liable.
Chapter XV. Bleaching – Faults in Sized Cloth which Cause Damage when Bleached and Finished.
Chapter XVI. The Ventilation of Humidified Weaving Sheds – Weaving.

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L. Bank Holt Mfg. Co., Graham, N. C.
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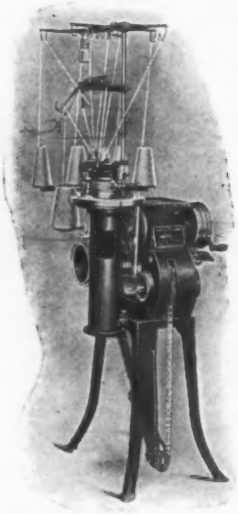

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KNIT.

.....

*Tennessee, Chattanooga. Fifteen thousand dollars of the $30,000 authorized capital stock of the Nick-a-Jack Hosiery Mills has been paid in cash. W. C. Kyle, president and general manager of the new company, has been superintendent of the Chattanooga Knitting Mills. Oswald Rothe, who will have charge of the dyeing and finishing, was formerly superintendent of the Aseptic Cotton Products Company's plant here. The name Nick-a-Jack is derived from a Cherokee Indian chief famous in the early history of this locality. A high grade of men's silk half hose will be manufactured and finished in four colors and the plant will be in operation about the middle of January. Options have been secured on two suitable buildings, although it is intimated that a final decision regarding the location of the plant has not been made.

*Tennessee. Newport. It was noted recently that J. W. Kyker was interested in a plan to establish a hosiery mill in Newport. Mr. Kyker will erect a suitable building and begin manufac turing hosiery with initial equpment of 18 machines which have been ordered.

*Texas, Austin. The knitting mill project in which E. A. Orchard was recently reported interested, has been organized with capital stock of $25,000. A building will be secured and machinery installed for manufacturing knitted underwear. Later it is expected to manufacture lines of hosiery also. Associated with Mr. Orchard in this project are J. Lee Costley and T. H. Barrow.

.....

Enlargements and Improvements.

Canada, Ontario, Brantford. Woolen carding and spinning machinery is being set up in the plant of the Best-Knit, Ltd., manufacturers of sweaters, scarfs and similar goods.

*Canada, Ontario, Listowel. The enlargement being built by the Perfect-Knit Mills, Ltd., will be completed about February 1. They manufacture men's and women's sweater coats, caps, toques, and other knit goods and have capital stock of $50,000. M. K. Becker is president, superintendent and buyer.

*Canada, Quebec, Montreal. A 24-spindle winder, 7 flat knitting machines, 5 circular knitting machines and 10 sewing machines are being added to the equipment of the Regent Knitting Mills, Ltd., 18A Pine Ave., manufacturers of men's and boys' sweaters and sweater coats. Electric power is used. L. Marcoux is buyer.

Georgia, Rossville. The new spinning frames being installed in the Richmond Hosiery Mills are to increase the capacity of the yarn department.

Michigan, Muskegon. The Muskegon Knitting Mills are adding the manufacture of woolen yarn and heavy wool hosiery and increasing the business, which was recently incorporated with capital stock of $100,000. Louis P. Haight is president, treasurer and buyer, and continues in control. Frank M. Barr is superintendent. The total equipment comprises 2 sets of wool cards, 640 woolen spindles, 132 knitting machines and 33 sewing machines. Electric power is used. The concern has also gone into the manufacture of office cabinets and will use a building on Water St. for this department.

New Hampshire, Belmont. A new 50 h. p. motor has just been installed in the local plant of the Ipswich Mills. Power is purchased from the Laconia Gas & Electric Company and the knitting mill is the largest individual purchaser.

*New York, Cohoes. A line of men's combed Egyptian balbriggan underwear in two-piece garments and union suits is being added to the products of the B. & L. Textile Company. This concern moved several months ago from its old quarters to larger space in the Victor Mill, No. 1, on Ontario St.

*New York, New York City. Under a plan of reorganization of the Liberty Knitting Mills, 15 E. 4th St., it is proposed to organize a new corporation to be known as the Broadway Knitting Mills, which will take over the business and complete the construction of the mill in Brooklyn. Earlier in the year it was planned to build a 6-story fireproof loft building on Boerum St., Brooklyn, where the concern formerly had its factory. This building is in course of construction.

New York, Oswego. A certificate of increase of capital stock of the M. W. Brooks Knitting Company from $5,000 to $15,000 has been filed. The number of shares has been increased from 100 to 300. The concern manufactures eiderdowns, fleece linings, slippers, jackets and wool socks, and plans to make enlargements with the added capital.

New York, West Sand Lake. Repairs have been made by the McLaren Knitting Company, whose plant was recently damaged by fire and manufacturing operations are going on as usual. Men's overshirts and sweater coats are manufactured on 6 sets of cards, 67 knitting machines and 50 sewing machines.

North Carolina, Elizabeth City. A new heating system has been installed in the plant of the Elizabeth City Hosiery Company and the mill, which was shut down to facilitate this work, has resumed operations with a full force.

North Carolina, Hickory. The equipment of the Best Knitting Mills, C. Sherman Grove, proprietor, has been increased to 42 latch needle knitting machines and 15 ribbers, operated by electric power. Men's and women's seamless hosiery and misses' and children's ribbed hosiery are manufactured. Recently an addition was constructed and of late the plant has been running overtime. 8s to 40s carded yarns, 18s to 60s combed yarns, and 2/36s, 2/40s and 2/60s mercerized yarns are used.

Pennsylvania, Carbondale. Work on the addition to the Carbondale Knitting Mills has been completed and the capacity will be doubled. Plans are now being made for another addition on which work will be started very soon. Men's and women's coats, reefers and specialties are manufactured. The New York office is in the Fifth Ave. Bldg.

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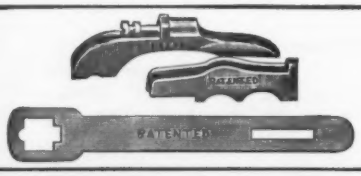

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FACTS AND GOSSIP.

.....

Alabama, Cordova. It is reported that a representative of a Boston engineering concern has been here in connection with the projected enlargement of the Indian Head Mills of Alabama. It is said the engineering firm will make changes in several cotton mills in the South and install machinery to make greater variety of cotton products. Nothing could be learned regarding pro jected changes in the Indian Head Mills at the offices of the treasurer and of the selling agents.

Alabam, Eufaula. The Cowikee Mills are reported to be working on an order for 750,000 yards of bleached cotton goods for export.

California, Los Angeles. Arthur W. Kinney, Industrial Commissioner of the Los Angeles Chamber of Commerce, is trying to secure a woolen mill industry for Los Angeles.

*California, Los Angeles. Arthur Bridgman is no longer interested in the Los Angeles Cotton Mill Company project. E. B. Spencer, Union League Bldg., Los Angeles, is president of the company which was organized, but it is understood that the project will not be revived.

California, Marysville. The Marysville Woolen Mills have been sold for taxes to Waldo S. Johnson, a local attorney. It is said that some action in regard to redeeming the property will be taken within the next ninety days. The plant has not been operated for several years, although recently there have been numerous rumors that efforts were being made to resume operations.

California, San Francisco. The Matrix Textile Company has been incorporated with authorized capital stock of $25,000 to weave silk and other textile goods. $1,200 has been paid in. The incorporators are William O. Mills, J. O. Mills and A. Emerson.

Connecticut, Baltic. The Shetucket Worsted Mills are running both of their plants overtime until nine o'clock to get out orders for early delivery. They have 40 looms in the new mill and 45 looms in the old plant.

Connecticut, Bethel. Men interested in locating a silk dyeing plant here have been in communication with the Bethel Board of Trade. The matter is said to be indefinite as yet.

Connecticut, Danbury. The Tweedy Silk Mills have distributed checks to every employe amounting to 10 per cent. of earnings during the last year, in accordance with the profit sharing plan adopted in January.

Connecticut, Middletown. The Poidebard Silk Company is running out warps preparatory to closing the plant here.

Connecticut, Mystic. Efforts are being made to clear up the title of the Royal Linen Mills building in order to turn over the property to a prospective purchaser.

Connecticut, New Haven. It is rumored that a dye house will be erected on Waterfront St. in the spring by the new textile concern which recently purchased 25 acres in this vicinity. According to the rumor other buildings will be erected later and the completed plant will employ 800 hands.

Connecticut, North Windham. It has been decided not to rebuild the North Windham Mills of E. H. Hall & Son, which were destroyed by fire several months ago. The concern has gone out of business. Cotton yarns are manufactured.

Connecticut, Shelton. V. E. Brobst, superintendent of the Specialty Weaving Company, has dismantled the plant and shipped the machinery to other plants of E. & H. Levy in York and Hanover, Pa. The building will be occupied by Sidney Blumenthal & Co., who purchased the property several months ago.

Connecticut, Voluntown. The Briggs Mfg Company is now manufacturing in addition to its regular products, a line of automobile tire fabrics.

*Georgia, Elberton. The Elberton Mfg. Company, which took over the Home Cotton Mills, is running full time with 8,400 ring spindles and 174 looms. Particulars of this reorganization have been given previously.

*Georgia, Rome. About 50 per cent. loss was suffered by the Dixie Spring Bed & Mattress Co. in the recent fire. They expect to resume business as early as possible.

*Kentucky, Louisville. Benjamin F. Washer, Paul Jones Bldg., attorney for the bond-holders who recently purchased the plant of the Bradford Worsted Spinning Company, states that no definite plans have been made as yet regarding the future of the property. On December 14 the first mortgage bondholders purchased the property for $81.000. Since the purchase various uses have been considered but nothing has been agreed upon.

Maine, Camden. The Lincoln Woolen Company is running to full capacity in all departments and it is reported have orders which will last several months. Eight sets of cards and 40 looms are operated on woolens.

Maine, Dexter. The Dumbarton, Morrison and Wassookeag Mills have orders aggregating about $100,000 for uniform cloth for export. The mills expect to run night and day as fast as operatives can be secured.

Maine, Hartland. A section of the Linn Woolen Company's plant is to be occupied by a concern engaged in the manufacture of skirts. The plant was closed several weeks ago owing to a disagreement among the directors.

Maine, Princeton. George B. McKechnie and Jason Greenlaw have purchased the woolen custom carding and spinning mill of Stephen L. Peabody.

Maine, Sangerville. An increase has been made in the capital stock of the Sangerville Woolen Company from $50,000 to $175,000. Fancy cassimeres are manufactured on 8 sets and 53 broad looms. F. H. Carr is president, manager and buyer.

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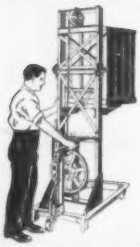

enable one man to lift heavy boxes, bales, barrels and rolls, clear to ceiling's height. Built to operate by hand, electric or pneumatic power. Portable, safe and simple.

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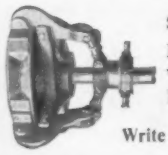

Some sizes as low as one dollar per horsepower. This clutch will carry 25 to 50% overload. Built any size 5 to 100 H. P.

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Decatur Foundry, Furnace & Machine Co.
Dept. C, Decatur, Ind.

Massachusetts, Norton. The Talbot Mfg. Company has been incorporated with capital stock of $50,000 by Walter H. Talbot, president; Frank S. Talbot, treasurer and clerk, and George H. O'Brien. The corporation is authorized to do weaving, knitting, etc. W. H. Talbot and F. S. Talbot are president and treasurer, respectively, of the Talbot Wool Combing Company here, a commission wool combing, scouring and carbonizing concern.

Massachusetts, Pittsfield. It is reported that three of the local woolen mills are working on large orders for uniform cloth for export and that the plants are being operated night and day as far as help can be secured. An early delivery is desired.

Massachusetts, Smith's. Joseph H. Walker, formerly superintendent of Charles A. Stevens & Co., Ware, Mass., has inspected the Swift River Mill, but has not entered into any negotiations for the purchase of the property as yet.

Massachusetts, Springfield. The Bozart Rug Company has been incorporated with capital stock of $50,000 to manufacture fibre and other rugs. William M. Stevenson is president and treasurer; Charles I. Hutchins, vice-president; and Jessie D. E. Marks, clerk.

Massachusetts, Worcester. The Swananoa Mills, formerly manufacturers of ribbons and bindings at 47 La Grange St., whose plant was burned several months ago, have gone out of business.

Michigan, Clinton. It is reported the Clinton Woolen Mfg. Company has never been so rushed in its history as at the present. A large order for cloth for the U. S. Government is being worked up.

*Missouri, Kansas City. It is reported the Burdett Mfg. Company, recently organized as noted, will install carding and spinning machinery for a daily capacity of 1,500 pounds of mop yarn.

Michigan, Port Huron. A report has been received here that Belgian linen manufacturers are coming to Port Huron to investigate the possibilities of establishing flax fiber industries. The Summers Linen Co., manufacturers of linen rugs and other linen specialties, is located in Port Huron.

New Hampshire, Manchester. Plans are being considered by the Amoskeag Mfg. Company for the construction of new houses for operatives to take the place of the present tenement blocks.

New Hampshire, Milford. The mill property formerly occupied by the Summers Linen Company, which moved to Port Huron, Mich., is being put in repair.

New Hampshire, Nashua. At the annual meeting of the Nashua Mfg. Company Frederic Amory, the treasurer, in his report, stated that much work had been done in the dyehouse for the Jackson Company and that if this continues to increase an addition to the dyehouse will be necessary.

New Hampshire, Tilton. It is reported locally that the Tilton Mills will start on a night and day schedule early in January to get out rush orders.

New Jersey, Paterson. The Victory Silk Company will put on the market in the spring a new silk cloth suitable for men's clothing. Particulars of the new fabric have not been made public, but it is expected that it will be successful along the lines of "Palm Beach Cloth," a light worsted fabric for men's wear which is manufactured by the Goodall Worsted Co., Sanford, Me. Experiments are now being conducted in the mill with a view to turning out the best patterns in the best weights.

New Jersey. Paterson. John Duni has opened an office at 204 Straight St. for the sale of raw silk and silk waste.

New Jersey, Paterson. The Henry Doherty Silk Company report every loom running full time and orders ahead for several months.

New York, Amsterdam. A great improvement has taken place in the local carpet and rug mills. McCleary, Wallin & Crouse have started up their Axminster department after a shut down of three weeks, and the Shuttleworth Bros. Company are planning to start up idle machinery.

New York, Corning. Henry E. Bodine, secretary of the Corning Chamber of Commerce, would like to get in touch with a textile manufacturer who would be interested in establishing a plant in a locality where there is planty of labor and where good buildings are now available.

New York, Jamestown. According to an advance report of the Industrial Directory published by the State Labor Commission, Jamestown ranks first among the cities of New York State in the manufacture of woolens and worsteds.

New York, New York City. S. Reutlinger, president of the Queen Braid Works, 227 W. 17th St., has withdrawn from the concern and the business will be continued under the same name by a copartnership composed of Saul Rosenstein and Leo Schwarz. It was noted previously that the concern had dissolved voluntarily as a corporation.

New York, New York City. The Artistic Dyeing Company has been incorporated with capital stock of $20,000 to do a general dyeing and bleaching business. The incorporators are Abraham Kaback, Dora Kaback and Raphael Hurwitz. The attorney is N. H. Stone, 346 Broadway.

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In one volume are given outlines of woolen yarn manufacture, worsted yarn manufacture, on both English and French systems, weaving and finishing. There are numerous useful calculations, tables, recipes and notes. Brought up to date annually. 600 pages; green flexible leather. **Price, $1.00.**

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oil, grease and other mill stains quickly and permanently removed by the Sanitex Process. Machines installed in Textile and Knitting Mills, or Spotting done for the trade at reasonable rates.
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Covers all vegetable and other specks.
Does not stain white silk threads in goods.
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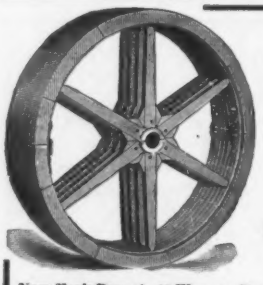

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KNIT.

.....

Facts and Gossip.

Canada, Alberta, Radcliffe. It is reported Dr. Bonner has made financial arrangements for equipping the new knitting mill. A building has been erected and it is expected that machinery will be installed early in the new year.

Canada, Ontario, Toronto. Samuel G. Tease, who it was reported previously was manufacturing knit goods in a small plant at 917 Lansdowne Ave., has 4 knitting machines and 2 sewing machines, operating by electric power on sweaters, sweater coats, jerseys, toques and athletic stockings, using 2/16s, 2/10s and 3/15s worsted. He contemplates purchasing hosiery boards.

Florida, Apalachicola. The local Chamber of Commerce is interested in establishing a knitting mill here.

*Georgia, Columbus. The Massey Hosiery Mills, formerly owned and operated as a separate plant by the Perkins Hosiery Mlils, have been merged with the Perkins organization and the name Massey Hosiery Mills has been discontinued.

Georgia, Columbus. Large orders for hosiery for export have been received by the three Columbus hosiery mills and it is said will require almost the total output of the mills for the next two months.

Georgia, Savannah. No increase is planned at present in the Savannah plant of G. H. Tilton & Son. This is a branch of the Tilton and Laconia, N. H., plants, and it has been persistently reported that plans were being made for an enlargement.

Illinois, Chicago. The Phoenix Knitting Mills, 2451 W. North Ave., Louis Marx, proprietor, have discontinued manufacturing. Mr. Marx is now sales manager for Joseph Jensen & Co., Chicago.

Kentucky, Middlesboro. The Middlesboro Knitting Mills will be dissolved and the business wound up. The plant has been idle for several months.

Maine, Ellsworth. The Berlin Knitting Company of Bangor, which has been reported negotiating for the Blood Knitting Mills property here with a view to removing the plant from Bangor, has not as yet reached a decision regarding the purchase of the property.

*Maine, Saco. George A. Chapman states that there has been some inquiry in regard to locating a hosiery mill here, but that nothing definite has been accomplished. Mr. Chapman is proprietor of the Chapman Laundry in Biddeford. He is the owner of a brick building on Mechanic St., Saco, which the projected industry might occupy.

Maryland, Frederick. A contract has been awarded by the United States Government to the Union Mfg. Company for 400,000 pairs of light weight woolen stockings, the order to be completed in 125 days.

Massachusetts, Hudson. The Shetland Knitting Mills, Inc., have been organized with capital stock of $8,000 to do a knitting business. Harry C. Moore is president, Charles P. Tucker, treasurer, and Ashley C. Eddy, clerk.

Massachusetts, Springfield. The Misses Russell of the Russel Knitting Works, 1267 North Street, who for several years manufactured lines of ladies' and children's sweater coats and fancy knit goods on 25 knitting machines, have sold the business to Miss H. N. Bailey, and the machinery has been moved to 330 Dwight Street, where the business will be continued under the name of the Russell Knitting Works.

Massachusetts, Worcester. The Eetna Hosiery Company is running five nights a week on an order for 60,000 dozen wool socks for export. The plant will be busy on this order until February 15, according to report.

Michigan, Marquette. A manufacturer of underwear from an Eastern state has been investigating places in this locality with a view to the establishment of a knitting plant in the copper region.

Minnesota, Rushford. John Backman has started a small knitting plant under the name of the Root River Knitting Factory.

New York, Albany. Some very large export orders have been secured by the Fuld & Hatch Knitting Company and they are negotiating for additional orders. Stephen D. Hatch, the export manager, believes they will be kept busy on foreign business far into spring, providing orders continue to come in as they have in the last few months. Jersey ribbed underwear is manufactured.

New York, Albany. A charter has been granted the Horste Knitting Mills, Inc., 328 E. 78th St., N. Y., with capital stock of $3,000 to manufacture sweaters and other knit goods. The incorporators are Morris Steg and Nathan Buchman, 265 E. 78th St., and others.

New York, Brooklyn. The corporation recently formed under the name of the Ess-Arr Knitting Mills, Inc., to succeed to the business of the same name, conducted at 1660 E. New York Ave., by S. Rottenberg, has organized with Mr. Rottenberg as president, treasurer and buyer, and Philip Zuckerman, superintendent. The capital stock of this corporation is $100,000. Lines of sweaters, sweater coats and jerseys are manufactured on 98 knitting machines and 72 sewing machines.

New York, Kinderhook. On account of the death of Henry Schnapper there will be some changes in the organization of the Van Buren Knitting Company after the first of the year unless the estate decides to continue its interest. Leo L. Wertheimer is conducting the business, making a specialty of manufacturing gloves, hockeys and leggings.

New York, New York City. William J. Brandt, 41 W. 21st St., who has had lines of sweater coats made up by contract knitters, will go out of the knit goods business.

New York, New York City. Rubin Bros., manufacturers of braids, trimmings, and knitted ties at 149 Wooster St., contemplate moving to a new location about the first of the year.

Wyandotte Textile Soda Users Know What It Means

Mill Men who are using Wyandotte Textile Soda know that as a wool and cloth scourer and fuller, a soap builder, and neutralizer, and as an assistant in the fixing and brightening of colors, Wyandotte Textile Soda has no equal.

They will laugh at your ignorance if you suggest that "soda is soda and they are all the same." Sodas may appear as similar as salt and sugar, and in their action be equally as different. Wyandotte Textile Soda is unlike any Alkali you have ever used.

It thoroughly removes all grease and other matter but does it without the least injury to the tensile strength of the fibre. The thoroughness with which it cleans insures a wool that takes the dye evenly with no streaks or discoloration. It also imparts that soft, lofty feel and appearance so much desired. On Worsted Yarn its action is equally desirable, bringing it out clear and snow-white not dingy or gray-white.

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We would also be pleased to tell you of its beneficial action on Hosiery and Knit Goods.

Further information as to these or other uses always gladly supplied.

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This Soda has been awarded the highest prize wherever exhibited.

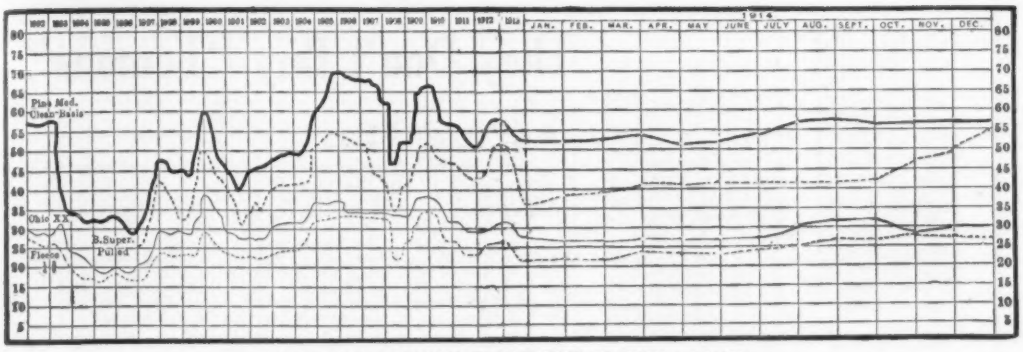

CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

THE WOOL MARKET

The wool trade is accepting the embargo as likely to last for some time, although there is the possibility that the fortunes of war may bring it to an end on short notice. Coarse wools suitable for army goods are in strong demand and, as our chart indicates, the prices of some grades have risen above the price level of finer wool, which under normal conditions are always higher. There has been a good volume of business transacted in American markets, principally in coarse and medium wools, and manufacturers have shown a greater willingness to buy at the advanced prices. The domestic market for wool goods is unsatisfactory. The mills working on army goods for the warring nations are crowding their machinery in order to deliver the goods on time, but this business is but a small part of the capacity of American mills and is necessarily of a temporary character.

WOOLEN.

.....

New Mills.

California, Fresno. D. L. Dunlop and Charles H. Kruger, formerly with McCleary, Wallin & Crouse, Amsterdam, N. Y., are building a carpet and rug mill here. They intend to employ about 25 hands at first.

*Rhode Island, Providence. According to report, the officers of the new J. & K. Worsted Mills Corp., recently organized with capital stock of $60,000, expect to build a new mill and equip it ready for operation before March 1. So far as known no arrangements have been made as yet for the construction of the mill. As stated in an earlier report plans have been made for a brick mill, 62 by 272 feet, 1-story high, to weave, dye and finish worsted goods. The site selected is on Hartford Ave., Olneyville. John H. Jones is president of the new concern and John L. Kehoe, treasurer.

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Enlargements and Improvements.

Canada, Ontario, Rockwood. Harris & Co., Ltd., manufacturers of woolens on 3 sets and 22 broad looms, are making changes and improvements in their plant, including improvements to the lighting system.

Connecticut, Stafford Springs. A new floor has been laid in the finishing room of the Cyril Johnson Woolen Co., and a new washer has been installed.

*Maine, Sangerville. Following the increase in the capital stock of the Sangerville Woolen Company from $50,000 to $175,000, they expect to add two sets of cards, and new spinning equipment a little later in the Sangerville Mill. They may increase the Carlton Mill and develop electric power also when conditions are favorable.

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We offer these products in all shades for the dyeing of cotton in any form.
Among them will be found colors specially adapted to meet the various requirements of fastness to light, washing, cross dyeing and fulling.
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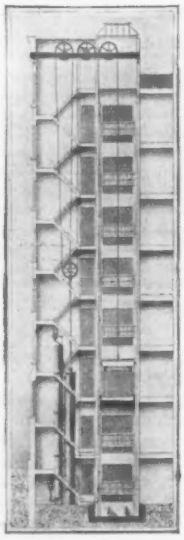

Steam Hydraulic Elevator in a Great Soap Factory in Jersey City

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They employ the Brains.
Suppose you cast your eye over a few of them Three eights just for luck.

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These, with over a thousand like them, are the kind of concerns that are installing the Wonderful Ridgway Elevators as fast as we can Make Them.

You Textile Makers are not the only folks who know a good thing when you see it.

We give a perfect hydraulic elevator that goes without a pump by direct attachment to the steam supply, and we guarantee **1st, It runs at virtually no cost; 2nd, It is Fool Proof; 3rd, It has NO Repairs.**

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Have you applied for--

Our "Free Correspondence Course on Peroxide Bleaching"?

This will be illustrated by bleached results on the goods you are now working, or on any goods you may want to take up.

It is immaterial what the goods are; they can all be Peroxide-bleached to great advantage and at the right cost.

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NEW YORK, N. Y.

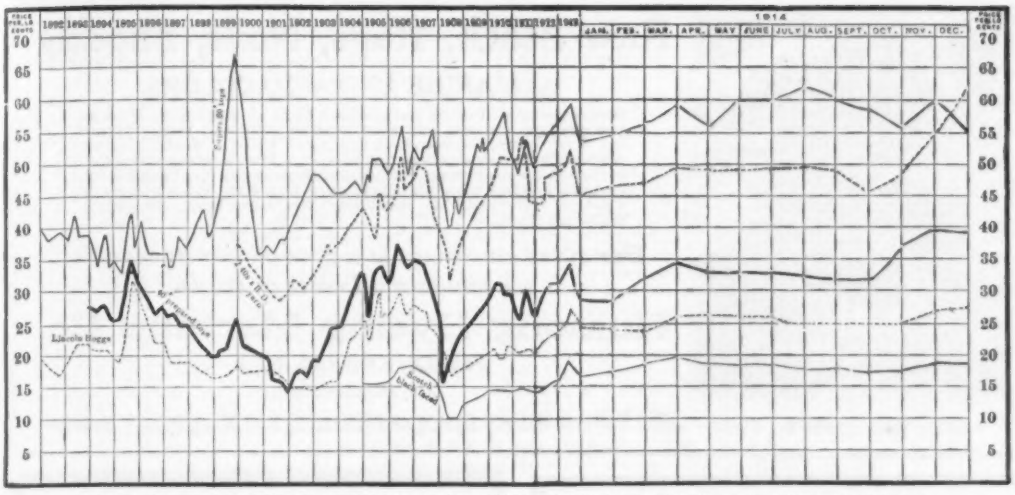


CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS, AND WORSTED YARN AT BRADFORD, ENGLAND

THE BRADFORD MARKET

By Our Regular Correspondent

Bradford, Eng., Dec. 24, 1914.

The British authorities have ceased for the time being to give out orders for army cloth, but the Russians are in the market for three million yards. The stoppage has given a little breathing time, in which crossbreds have not cheapened, but have not advanced. Reports of an easier tone in the primary markets have had no depressing effects and a steady and large consumption continues.

The position of merino wools is more difficult Consumption in all but the knit goods and dress trade is on a very small scale. The fine wools ordinarily taken for the Continent are abnormally cheap and the whole scale of values is deranged, 70s fetching no more than 60s. Some hopes are entertained of a revival of demand for merinos when an attractive level has been reached and spinners are expecting a better margin of profit upon their yarns. The prospects are confused by the difficulty of obtaining permission to export wools of this class. Scotch blackfaced wools are the only home-grown ones which have shown no material advance and an agitation is proceeding to procure liberty to ship them to America.

The preoccupation of manufacturers with army goods prevents the wholesale clothiers from getting the supplies they would like. Some exporters of fabrics have orders in hand which they are delaying to place. Stocks of such goods as serges are rather large in some mills, but are below normal in second hands and the owners expect to realize full values by holding.

WOOLEN MILL NEWS

Enlargements and Improvements.

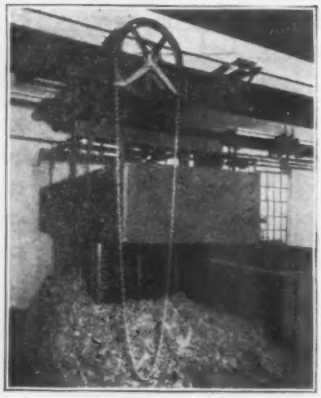
*Michigan, Hastings. Repairs will be made at once at the plant of the Hastings Wool Boot Company whose plant was recently damaged by fire to the extent of about $30,000. This plant is owned by the U. S. Rubber Co., of New York. It is reported that a local company has an order for 108,000 wool boots for shipment to France.

*New York, Falconer. Changes and improvements made in the equipment in the worsted mill recently taken over by the Cleveland Worsted Mills Company, will practically double the capacity and when finished the mill will have 6 cards, 4 combs, and 5,000 spindles, making worsted yarns up to 2/36s on the Bradford system. The name of the local mill has been changed to the Ferncliff Worsted Mills. George H. Hodgson, Cleveland, is the general manager, and H. Bloomquist, is local superintendent.

*New York, Jamestown. The addition to the Odsonia Worsted Mills of the Cleveland Worsted Mills Company, recently noted. will make the total equipment 8 combs, 7 cards and 17,000 spindles. French and English spun worsted yarns are manufactured.

*Ohio, Cleveland. Arrangements have been made for a further installation of new machinery in the plant of the National Woolen Co., including one wool mixer and 2 rag pickers. This new machinery will be installed in the new addition recently completed, in which a garnett and 4 sets of cards were recently set up. Wool shoddy and extracts are manufactured.

Oregon, Oregon City. The Oregon City Mfg. Co., operating 14 sets and 67 looms on woolen goods, have recently purchased a number of 92-inch looms and other machinery in Philadelphia, which is now being forwarded to the mill in Oregon. On their receipt at the mill they will be set up and put in operation at once.



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Raw Stock, Rags, Noils, Shoddy

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Batches started before and finished after suspensions.—Dye in one machine, chrome and after-treat in another.—Occupies half the floor space, requires half the liquor of other methods.—No working over live steam or hot kettles.—Time reduced and steam curtailed by continuous immersion throughout treatment.—Unlike other types, tops, slubbing, yarn and Raw Stock can all be dyed in same machine. Cost only little more than half and repairs one-tenth.

Our every statement is a part of our guarantee, we advance all costs of trials.

Hussong Dyeing Machine Co.

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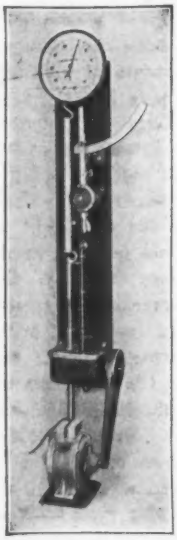
Tester

MOTOR DRIVEN



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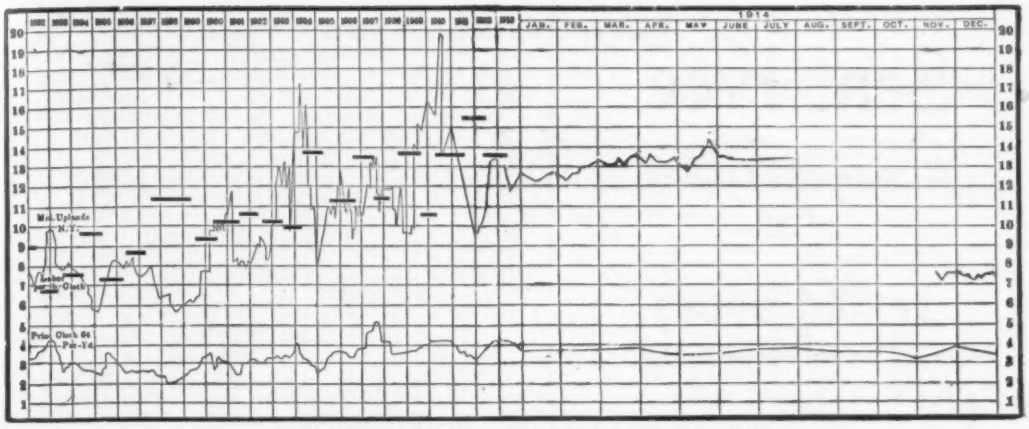

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

THE COTTON MARKET

The market for cotton has been strengthened by the improved conditions in the export trade, Great Britain and France having agreed that cotton is not contraband. As a result shipments to Germany have been resumed and a large quantity will be required to meet German requirements, the price of middling having reached 19.65 cents at Bremen, as compared with less than 8 cents in American markets. It is generally considered that prices on this side have been well maintained in view of the fact that the largest crop on record is coming to market. The movement into sight from Aug. 1 to Dec. 24 is reported by the "Chronicle" at 7,129,293 bales, as compared with 9,636,253 bales for the corresponding period of 1913. The same authority estimates the world's visible supply of cotton on Dec. 24, at 5,700,290 bales, as compared with 6,028,185 bales on the corresponding date in 1913, 6,338,005 bales in 1912, and 5,637,060 bales in 1911. Owing to the large crop and greatly decreased consumption, it is estimated that over 6,000,000 bales will be carried over to next season. Efforts will be made to restrict production, but the prospect is not encouraging for a restoration of the balance between supply and demand.

COTTON.

New Mills.

*Georgia, La Grange. The new Hillside Cotton Mills have organized with C. V. Truitt, president; S. Y. Austin, vice-president and general manager; Fuller E. Callaway, treasurer, and J. A. Perry, secretary. Previous reports of this new cotton mill project have been given. Construction work is to be started as soon as possible and it is expected that manufacturing will begin about Oct. 1, 1915.

*North Carolina, Charlotte. W. L. Robinson has been elected president of the new Robinson Mfg. Company; W. A. Watson, treasurer and W. E. G. Robinson, manager and buyer. A charter has been secured with authorized capital stock of $100,000 and the plant formerly occupied by the Charlotte Cordage Company has been taken over and is being remodeled and repaired preparatory to installing equipment of 3,500 spindles for making 10s to 20s hosiery yarns. Electric power equipment will be installed. As noted in a previous report, W. L. Robinson was formerly superintendent of the Cannon Mfg. Company's plant at Concord. W. E. G. Robinson was superintendent of the Franklin Cotton Mills at Concord, and is a son of W. L. Robinson. It is planned later to increase the equipment to 8,000 spindles.

******

Enlargements and Improvements.

Massachusetts, Fall River. A number of new spinning frames are being installed in the Flint Mills.

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COTTON MILL NEWS

Enlargements and Improvements.

*Alabama, Girard. Full time operations have been resumed at the Girard Cotton Mills, owned by the Eagle & Phenix Mills of Columbus, Ga Recently 200 old looms have been replaced with the same number of automatic looms.

Alabama, Mobile. Plans for equipping a $30,000 bleaching plant are being considered by the Barker Cotton Mill Company. This concern manufactures cotton damask, mercerized napkins, bed quilts, sheetings, wash cloths, Turkish towels and similar goods on equipment of 15,000 ring spindles and 400 looms. J. A. Rountree is manager and buyer.

Connecticut, Moodus. Electric motors are being installed in the Chace Mill and the Williams Mill owned by Hall, Lincoln & Co., 154 Milk St., Boston, and power will be furnished by the East Haddam Electric Light Co. These mills have received large orders for duck and overtime work is necessary. Recently new preparatory machinery, new spindles and new looms were added to these plants and the capacity largely increased, and the addition of the motors as auxiliary to the water power is required to drive this additional equipment.

*Georgia, Grantville. New machinery equipment will all be set up in the addition to the plant of the Grantville Hosiery Mills about the middle of January. This addition is 220 feet long by 120 feet wide, and is being equipped with 5,000 spindles, doubling the yarn capacity. There will be no increase in the hosiery department.

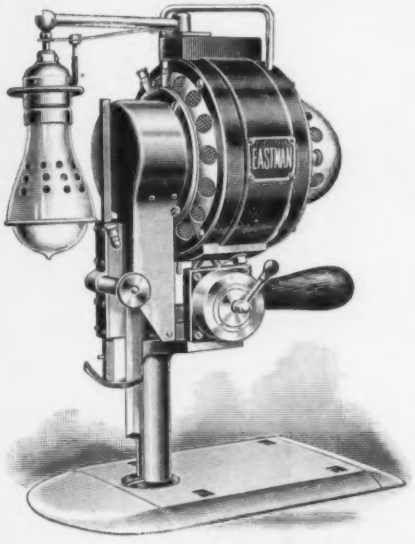
*Indiana, New Albany. Machinery is being installed in the new plant of the Mills City Cotton Mills Company at Clark and Locust Sts. This concern is composed of negroes and a smaller plant has been operated for some time on cotton bath rugs, toweling, scrub cloths and similar goods. Particulars have been given in earlier reports. J. E. Wiley is treasurer and manager.

Massachusetts, Clinton. Fifteen new spinning frames are being set up in the Lancaster Mills to balance the spinning and preparatory departments. The carding department recently was increased.

Massachusetts, Fall River. It is expected that new machinery is to be installed in the yarn departments of the Border City Mfg. Company and the Sagamore Mfg. Company, replacing some of the old equipment.

*Massachusetts, Millbury. The 205 new automatic looms to be installed in the addition to the Cordis Mill have arrived. It is expected the addition will be in use shortly, doubling the number of employes. The capital stock is now $300,000 and the equipment will be 17,184 spindles and 410 looms for manufacturing cotton ticking. J. Dudley Clark is president; F. W. Fabyan, Boston, treasurer; and Fred W. Moore, agent and buyer.

Massachusetts, White Valley. Ten new spinning frames are being installed in the White Valley Mills, White Bros., proprietors, taking the place of old machinery. The installation of this new equipment completes a series of improvements that have been in progress for the past year.



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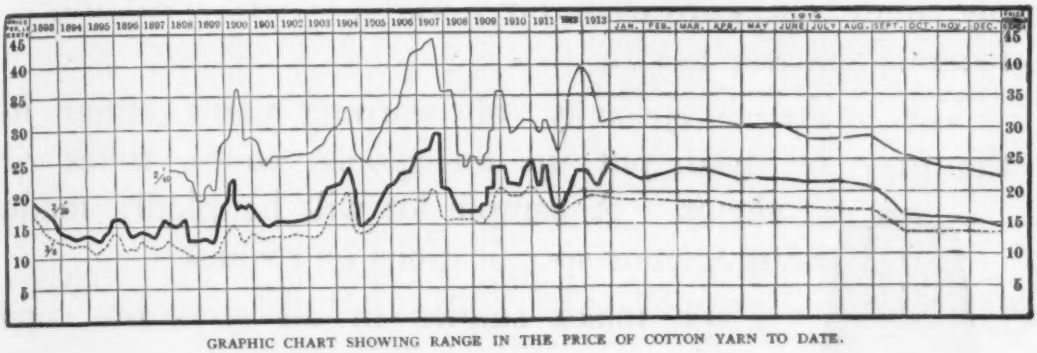

GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

THE COTTON YARN MARKET

The cotton yarn market during the month of December has proven to be one of the dullest months of the past year. December being a holiday month buyers refused to consider placing much new business and then, after the holidays, stock taking will be in order and up to January 15th the spinner and yarn commission house does not look for business. While there has been a great deal of talk about war contracts among textile mills, the actual results except in isolated instances have had no effect on textile business and manufacturers are running less machinery today than during 1914. One redeeming feature of present conditions, however, is that there is a better feeling of confidence in the trade for the future and some few orders have been booked as far ahead as March and April and manufacturers except in a few instances believe that prices are as low now as they will be and they would not hesitate to buy liberally if they could get the business to warrant it. Manufacturers, however, reason that all indications point towards better business and with the hand to mouth buying which has prevailed in the textile lines during the past two years any general improvement must be felt very quickly.

It is reported that 20/2 warps have been offered as low as 14 1/2 cents and 30/2 ply at 17 cents and with 1/14 warps as low as 14 cents for white and 13 1/2 for tinged yarns. 1/10 skeins are being offered at 13 cents with warps at 13 1/2 with some sales being booked. Knitting yarns on a basis of 14 cents for 1/10 frame spun is an offering force with no great demand.

Eastern Cops

6s	14¼
8s	14¾
10s	15¼
14s	15¼
16s	16¼
18s	16¾
20s	17¼
22s	17¾
24s	18¼
26s	18¾
30s	20
34s	19
36s	23
40s	24

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½ c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler

12s	16½
14s	17
18s	18
20s	18½
24s	20
26s	21
30s	22
36s	24½
40s	26½
45s	30½
50s	32½
55s	38½
60s	41½

Eastern Two-Ply Warps, Carded Peeler

2/30s	22½
2/36s	25
2/40s	27
2/45s	31½
2/50s	33½
2/60s	42½

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cannot obtain their maximum production unless the 2 or 3 ply Spun Silk Yarn used for warping is free from imperfections and true to size.

We make a specialty of warping yarns either in the grey or dyed, put up on spools, cones, tubes or skeins. A sample lot will be gladly made up to your specifications on request.

We make singles in all sizes on cops in the grey. Do you want to see samples?

Nonotuck Silk Company

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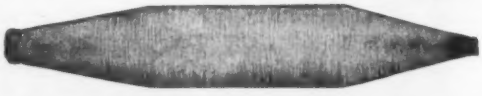
SPUN SILK YARNS
Florence, Mass.



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Cotton Warps — on Beams, Jack Spools, Tubes and Cones. In Fancy Twist, Colors and Printed.

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On Beams, Jack-Spools, Cones, Skeins and Chain Warps

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HARTFORD, CONN.

THE PHILADELPHIA MARKET

7s and coarser	14
8s and 9s	14
10s	14
12s	14½
14s	15
16s	15½
18s	16
20s	16½
22s	17
24s	17½
26s	18
30s	19
40s	24
50s	32

Southern high grade mule yarns:—

Cones

10s	16
12s	16½
14s	17
16s	17½
18s	18
20s and 22s	18½-19
24s	20

Southern frame yarn, lower grades:—

6s and 8s	13½
10s	13¾

Eastern cones (high grade quality):—

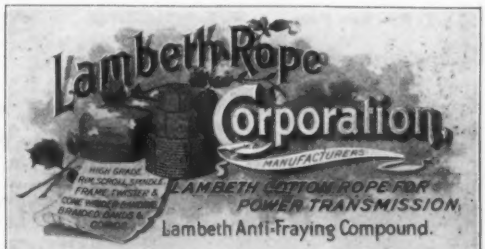
10s	16½
12s	17
14s	17½
16s	18½
18s	18¾
20s and 22s	19¼-20

Skein yarn (mostly Southern):—

4s and 8s soft	13
10s and 12s	13½
14s and 20s	14-15
22s	15½
10/2	14
16/2	14
20/2	15
30/2	17
40/2	23
8/2	14
7/6	14

Southern warps:—

10/1	13½
14/1	14
16/1	14½
20/1	15
22/1	15½
26/1	16½
30/1	17½
8/2	14
12/2	14½
14/2	14½
16/2	15
20/2	15½
26/2	17
30/2	17½-18
40/2	23½
50/2	32



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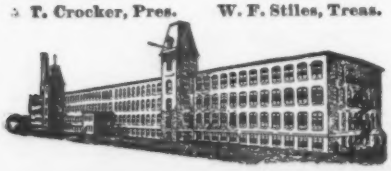

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LINEN YARN MARKET

Since our last report the situation has suffered serious change which has excited the Irish market. Along certain lines, particularly coarse goods, there has been a sharp advance in price not alone caused by the enhanced value of raw material, but more especially by the action of the German government in practically closing the Continental market and securing all the yarns that they could lay their hands on for their own market. From one firm of Ghent spinners, the Germans took 160,000 bundles of yarn, which they sent to Germany, and will secure from the same source a further quantity of coarse line and tow yarns which will make an amount equal to about one-half million bundles of yarns which, under ordinary circumstances would have found their way into the Irish market. Besides this a very large quantity of Belgian spinning machinery is being removed to Germany. This not alone takes all the yarns of the Belgian market, but practically cuts off all opportunity of replacing the yarns owing to the fact that the machinery is gone. Certain Belgian manufacturers have been asked to spin up what small quantities of flax they may have in stock and accept payment with German bonds. This is no incentive to the Belgian industry, which is now practically paralyzed until the war is over. The effect upon the Irish market is therefore quite apparent as recent quotations show that the coarse yarns have advanced in the neighborhood of 100 per cent. since the outbreak of the war and each week sees gradual advances in price which is backed up, not alone by the scarcity of coarse yarns at enhanced value, but by the fact that the Irish flax markets have never in the history of the flax industry been so excited. Irish flax having reached the extreme figure of $800 per ton, a price never hitherto reached in the Irish market, not even during the American civil war. Another fact that has considerably excited the coarse end is that the Italian government has prohibited the export of hemp. This has also excited the flax markets in the various centers, as we noted in our last issue that flax spinners were preparing to use the better selections of Italian hemp as a substitute or at least to mix with the tow out of which the coarse numbers are made in the Irish market. It is utterly impossible, therefore, to give any adequate idea of the conditions of the Irish market as we see no end to the possibility of further extensive advances and wonder whether it will be possible for the trade in general to stand much further along this line.

("A" Quality)

35s Lea on cones	83-90
50s Lea on cones	96
60s Lea on cones	1.00
80s Lea on cones	1.00
90s Lea on cones	1.10-1.15
100s Lea on cones	1.15-1.20
110s Lea on cones	1.30-1.40
120s Lea on cones	1.70

KNIT.

New Mills.

Maryland, Frostburg. D. M. Mullin has left the Adler Underwear & Hosiery Mfg. Company of Cincinnati, O., and returned to Frostburg where he is manufacturing a line of woolen hosiery for men, women and children for the Darn-No-More Hosiery Company, of Chicago, Ill. Mr. Mullin has 7 knitting machines, 1 ribber and 1 looper at present, but expects to increase and manufacture a line of his own to sell to the retail trade. At present Mr. Mullin is sole owner of the plant, but the business may be incorporated.

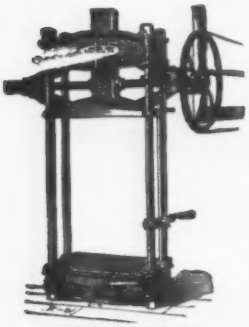
*Massachusetts, Lowell. More machines are to be added in the new knitting mill at 179 E. Merrimack St., recently established by Walter E. Kehew, under the style of the Walters Knitting Company. Men's high grade mercerized hose is manufactured and the product is sold direct. Electric power is used.

New Jersey, Camden. The New Jersey Knitting Mills have been started up at 420 Keighns Ave., where a number of machines have been installed for the manufacture of lines of sweater coats, fancy knit goods, etc.

*New York, Brooklyn. The Shirley Knitting Mills, Inc., reported organized early in November, are establishing a new knitting plant at 814 Gates Ave., for the manufacture of jerseys, bathing suits, sweater coats, and athletic knit goods. Ten knitting and 6 sewing machines will comprise the initial equipment. S. Beinfield is president; Alexander I. Greenhill, vice-president, manager and buyer; and N. W. Amlos, treasurer. The product will be sold direct to jobbers.

*North Carolina, Charlotte. The Defiance Sock Mills, a small new concern at 1400 South Boulevard, has begun manufacturing men's half hose on 20 knitting machines, single 12s black, and 24s mock Egyptian yarns are used. Morehead Jones and K. S. Tanner are the proprietors and both of these men attend to the buying.

Pennsylvania, Philadelphia. The Brown-Phelps Hosiery Company has been started up in the one-story building on 3rd St., below Ontario, in which they have installed 111 latch needle knitting machines, 15 ribbers, 10 loopers and 5 sewing machines on which they are manufacturing seamless cotton, mercerized and silk hosiery, 220 and 240-needle goods for men, women and children, the production being sold direct through their main office at 2nd and Westmoreland Sts. The plant is run by electric power.



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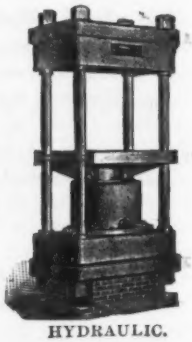

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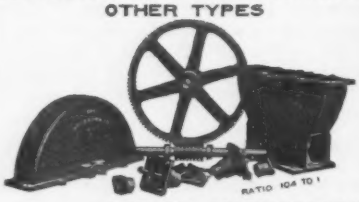

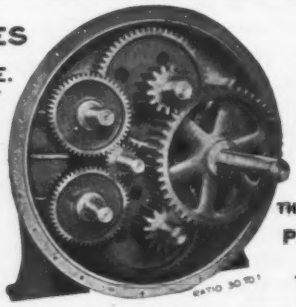

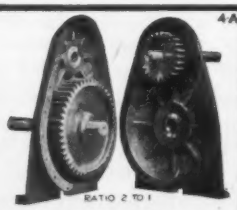

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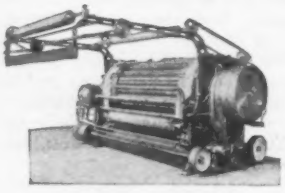
The Leading Manufacturers of Napped Fabrics in America and abroad are using the Mueller 36 Roller Napper.



A. W. BUHLMANN

TEXTILE ENGINEER

200 Fifth Avenue, - New York

KNIT.

.....

Enlargements and Improvements.

Pennsylvania, Philadelphia. Querns Bros., manufacturers of women's and misses' cotton and lisle underwear at 1916 No. 4th St., will make extensive changes and additions to their plant, including the building of a 1-story brick addition to increase the power plant in which two 150 h. p. water boilers, a new engine, generator, etc., will be installed. Other changes and improvements will be made throughout the plant. W. E. S. Dyer, the Philadelphia mill architect and engineer, is in charge.

Pennsylvania, Philadelphia. The Safe Keep Pocket Hosiery Co., 1215 Filbert St., the factory being located at 5012 Chancellor St., manufacturers of a patent safety pocket for women's hosiery, will soon be incorporated and there is a possibility that the plant may be removed to another town, machinery installed and a general line of hosiery manufactured.

Pennsylvania, Philadelphia. The Zephyr Knitting Mills, recently reported by us as starting up a plant on Market St., above 4th, have leased the third floor of the building at 241-43-47 Arch St., into which they will remove after January 1. They are manufacturing infants' and children's sweater coats, combination suits and a general line of machine and hand knit goods, their present equipment consisting of 10 flat knitters and 10 sewing machines, their production being sold direct and through N. Y. Louis Rubin is the proprietor.

*Pennsylvania, Reading. In order to have more room for their growing business the Glasser Hosiery Company, Inc., are moving from 133 Pearl St. to 13th and Muhlenberg Sts. About 100 additional hands will be employed in the new location. It was noted recently that the business has just been incorporated with capital stock of $50,000, and 100 additional knitting machines have been purchased. According to report a large export order has been received.

*Tennessee, Morristown. The installation of 40 additional knitting machines in the Morristown plant of the Holston Mfg. Company has been completed. The main mill is at Lenoir City.

.....

Mills Starting Up.

Canada, Ontario, Orangeville. The New Dods Knitting Co., Ltd., is beginning operations. This is an underwear plant and is headed by John M. Dods of the Alton Knitting Mills, Alton.

New York, Stittville. The plant of Atwood & Buell, which has been idle for several weeks, has been started up on men's balbriggan underwear.

Pennsylvania, Newcastle. Within a few days the new Newcastle Knitting Mills will begin operations and when the plant is running in full employment will be given to 150 people. This company was incorporated several months ago with capital stock of $100,000 and secured a building at Mill and White Sts. which has been repaired and enlarged and equipment added for manufacturing cotton hosiery. Robert A. McKinney is president; William H. Grove, treasurer; Samuel W. McCracken, superintendent, and J. Howard Wood, buyer. John M. Given, Inc., will sell the product.

*Virginia, Williamsburg. Machinery is being started in the carding and spinning departments of the Williamsburg Knitting Mill as fast as possible and the yarn is being shipped to Brooklyn to be knitted into sweater coats. New knitting machines for making sweater coats are to be installed in the Williamsburg Mill and will be set up as soon as they are received. They have an order from the French Government which, according to John McGinnis, the superintendent, will keep them running to full capacity for eight or ten months. Edman Fain, of Brooklyn, N. Y., is now the owner of the Williamsburg Knitting Mills.

Virginia, Williamsburg. Preparations are being made to reopen the old Williamsburg Knitting Mills. It is reported locally that a Mr. Fain of New York is starting up the plant to fill a large order for sweater coats for export which will keep the mill busy for many months. The carding department is practically ready to start up. John McGinnis, who was superintendent of the plant when it was last operated, will have charge under the new management.

MISCELLANEOUS.

Pennsylvania, Philadelphia. A new bleachery has been opened in Manayunk under the style of the Ashdale Bleachery for the purpose of bleaching hosiery, underwear, Turkish towels and other cotton fabrics. They are fully equipped to handle these goods by the peroxide of lime method and have capacity of 8,000 pounds per day. Thomas E. Ashdale is manager.

Pennsylvania, Philadelphia. The Elastic Car Waste Manufacturing Co., with offices at 119 South 4th St., have removed their plant from 2nd and Diamond Sts. to larger quarters in the building at Howard and Palmer Sts. The company will soon be incorporated and its business carried on on a larger scale.

Pennsylvania, Philadelphia. The Philadelphia Silk Dye Works, with a capacity of 2,000 pounds per day, have been started up at Germantown & Hunting Park Aves., with Fred H. Sharp as president and buyer; Chas. A. Haug, Jr., vice-president, and A. I. Sharp, secretary and treasurer. They are dyeing and weighting skein silk.

Pennsylvania, Philadelphia. The Lyon Silk Co., recently reported by us as starting up at 4342 N. Gratz St., Wayne Junction, on commission winding, coning and spooling of silk, are arranging for the installation of coning and twisting machinery in addition to the winders. They are also buyers and dealers in hosiery clippings, odd lots of silk of all kinds. The plant is run by gas. Albert Bamber is the proprietor.

*Pennsylvania, Reading. Construction work will be completed about February 1 on the new 4-story mill at Front and Chestnut streets, of Fred H. Hodges, a manufacturer of mattress felt and mattresses. Additional machinery is to be installed.

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA

Manufacturers of

PICKERS—Lumpers; Rag, Burr, Wool, Cotton, Jute, Fearnaught and Garnett Pickers; also Rag, Carpet and Jute Shredders.

WILLOWS—Continuous Cotton Stock Opening, Cleaning, Metal Extracting and Condensing Outfit; also Square Box and Cone Willows or Dusters.

GARNETT MACHINES—For carding cotton and woolen waste clippings, etc.; also for manufacturing cotton, wool and jute batting or felts.

FEEDS—Self feeds for cotton, wool, worsted or jute; also Camel Backs, Blamires and Apperlys.

METALLIC BREASTS Burring Machines and Self-Stripping Feed Rolls for Cards and Garnett Machines.

RECLAIMING MACHINE—For Opening and Cleaning various kinds of Cotton Mill Waste.

CARDS—Woolen, Worsted, Cotton Waste, Shoddy, Hair and Jute Cards; also Special Cards for the manufacture of Wool Hats.

MULES—Heavy and Durable for Wool and Waste Yarn.

TWISTERS—Plain or Fancy Twisters for Flake, Loop or Bourette Yarn.

BOBBIN WINDERS—Automatic Jack Bobbin Builder and Adjustable Creel for different length spools.

WARPING MACHINERY—Copper Cylinder Warp Dressers with single and double size pans; beamers; Section and Pinless Warp Mills, Creels and Dresser Spoolers for Wool or Worsted.

GRINDERS, Etc.—Floor, Traverse and Portable Grinders for Cards, Garnetts or Rag Pickers; also Turning Rests, Fillet Winders, Card Clothing Stretchers and Cleaning Frames.

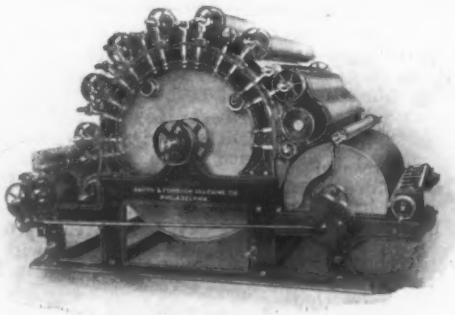
Special Circulars furnished for each Machine

Felting Machinery for Manufacturing Soft Felts or Commercial Batts, for Mattresses, Comforts, etc. from Cotton Waste, Linters, Jute, Wool and Wool Waste

A complete line of Machinery for Manufacturing Gunny Bagging from Old Gunny Bagging
Complete Equipment for Manufacturing Mop Yarn and Rope from Cotton Waste

Estimates and complete plans furnished

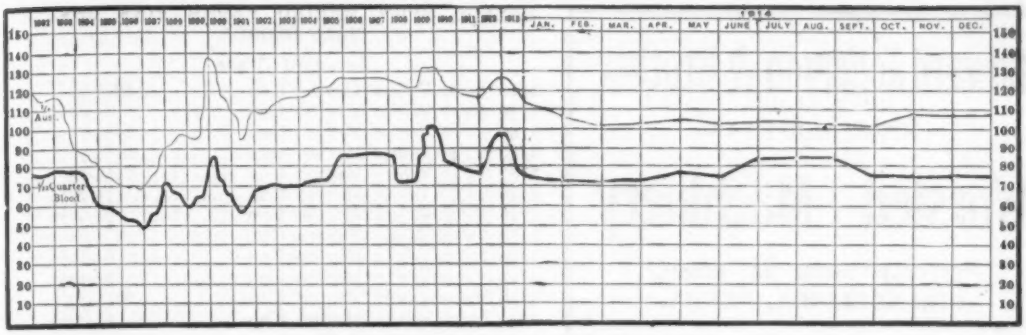
One of the large number of styles we build



Send us your specifications for woolen or worsted cards

First Breaker Card,—Style No. 6

S. K. F. Self-Aligning Ball Bearings on Main Cylinders
Self-Aligning Sleeve Bearings on all cylinders
Case Hardened Journals on fast running rolls
New, light, undentable cast iron workers
Convenient and positive adjustment
Many new and improved features



GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

WOOLEN AND WORSTED YARN MARKETS

Spinners of worsted yarns report business as very quiet, waiting for something to happen. They are not in a position to accept offers for any lower prices than those quoted today for the reason that wools have steadily advanced, the increase being in greater proportion than the advance in yarns. Coarse wools have advanced considerably while the finer grades have been affected sympathetically. A great many spinners are of the opinion that prices will go still higher, although there may be an early reaction. Wools in Europe have already declined, but owing to the embargo American spinners are unable to figure on securing any of these wools.

The sweater business has been a disappointment, not only to the spinner, but to the manufacturers, as the jobbers are not interested and are not buying for next year. At this writing it is too early to tell what the retailers will do as they do not come into the market for their requirements until after January 1st. The hosiery knitters in a majority of cases are quite busy and those in a position to take care of wool hosiery for foreign governments are sold up. The underwear manufacturers who are turning out lines of branded or trade marked goods are also quite busy, while those knitters who are selling wholly to the jobbing trades and making the cheaper lines are practically at a standstill.

There have been few contracts placed for yarns for future consumption. Inquiries are also slow for immediate delivery.

Weavers report that they expect a very quiet time after the middle of January as they will have all their light weight orders finished by that time and their heavy weight business will not come in until the middle of March.

BRADFORD SPUN YARN

2/12 to 2/16 low common	55-57½
2/20 to 2/24 low 1/4	60-62½
2/20 to 2/25 1/4 blood	70-72½
2/26 to 2/28 1/4 blood	72½-75
2/32 1/4 blood	72½-77½
2/20 3/8 blood	77½-80
2/26 3/8 blood	80-82½
2/32 3/8 blood	80-82½
2/36 3/8 blood	77½-82½
2/40 1/2 blood	95-1.00
2/40 delaine	1.00-1.02
2/50 delaine	1.07½-1.10
2/40 Australian	1.05-1.07½
2/50 Australian	1.12½-1.17½
2/60 Australian	1.25-1.27½
3/30 and 3/32 luster	95-97½
3/36 luster	1.10-1.12½

KNITTING YARNS

Dyed and Bleached—Bradford System

2/7s straight 1/4 blood	80-82½
2 and 3 ply 10s-20s straight 1/4 blood	82½-85
2 and 3 ply 20s-24s straight 1/4 blood	85-87½
2 and 3 ply 24s-28s straight 1/4 blood	87½-90

(Reduce 8c. for yarn in oil)

FRENCH SPUN YARN

1/20 1/4 blood	77½
1/20 high 1/4	80
1/20 3/8	80
1/20 high 3/8	82½-85
1/20 1/2 biood	87½
1/30 1/2 blood	90
1/40 1/2 blood	92½-95
1/50 delaine	1.02½-1.05
1/40 Australian	97½-1.00
1/50 Australian	1.07½-1.10
1/60 Australian	1.17½-1.22½
1/70 Australian	1.25-1.27½

For two ply knitting twist add 5c. additional to above prices.

For two ply weaving yarns add 7 1/2c. additional to above prices.

Edward Jefferson & Brother
SPECIALISTS IN
Worsted Machinery
117-123 South 2d Street
PHILADELPHIA, PENNA.

MACHINERY ERECTED
For Spinners of Cotton, Woolen, Worsted, Silk and Flax
Making a Specialty of WorstedMachinery
Carding, Combing, Drawing, Spinning, Twisting, Finishing, Lining, Levelling, Dismantling, Packing, Shipping
Work Done Anywhere *All Work Guaranteed*
MICHAEL KERWIN, 2321 E. Norris St., Philadelphia, Pa.

William Whitman Co.
COMMISSION MERCHANTS
COTTON and WORSTED YARNS
BOSTON NEW YORK PHILA. CHICAGO CHARLOTTE

JAMES LEES & SONS CO.
MINERVA MILLS
Spinners of WORSTED YARNS
For Weaving and Knitting
In the Grey and in all colors and mixtures
Philadelphia Office: 627-29 Bourse Bldg.
Mills and Office: Bridgeport, Montgomery Co., Pa.

J. B. Jamieson
77 Summer St., Boston
COTTON YARNS
of all descriptions
Correspondence Solicited

HAROLD R. SHIRLEY
242 Chestnut St., Philadelphia, Pa.
French Spun Worsted and Merino Yarns
Bradford Spun Yarns
Woolen Yarns
FOR WEAVING AND KNITTING

SOAPS HIGH GRADE SOAPS
Bleaching, Fulling and Scouring SOAPS
Red Oil and Olive Oil Crown Soaps
J. O. Draper Co. Est. 1860 Pawtucket, R. I.

FRENCH SPUN MERINO YARNS—FINE ONE-HALF BLOODS

Standard Grade

1/20 50/50 White Merino Cop	62½-65
1/30 50/50 White Merino Cop	65-67½
1/40 50/50 White Merino Cop	67½-70
1/20 60/40 White Merino Cop	67½-70
1/30 60/40 White Merino Cop	72½-75
1/40 60/40 White Merino Cop	75-77½
1/20 70/30 White Merino Cop	75-77½
1/30 70/30 White Merino Cop	77½-80
1/40 70/30 White Merino Cop	80-82½
1/20 80/20 White Merino Cop	80-82½
1/30 80/20 White Merino Cop	82½-85
1/40 80/20 White Merino Cop	85-87½
Sliver and Sanitary Mixes	3c. more
Coning on 1/20	2c. more
Coning on 1/30	3c. more
Coning on 1/40	4c. more

WOOLEN AND MERINO YARNS

The spinners of woolen and merino yarns are doing very little in the way of turning out yarns. They are waiting for business to brighten up, and this will not happen until the buying trade completes their stock taking, which is usual at this time of the year, manufacturers wishing to show as light a stock on hand as possible and are not, therefore, anxious to make contracts until after the first of the year. Some of the sweater concerns have run out of yarn with orders on hand to be filled and have been compelled to go to the spinner for yarns for immediate delivery. The raw stock market is firmer. If there is any demand for yarns this will have a tendency to run up prices. Although our quotations have not been changed it is evident that if raw stock continues to rise, spinners will have to charge more for yarns. The spinner seems to be optimistic and looking forward to better conditions than those which they have experienced during the past twelve months.

WOOLEN AND MERINO YARNS

2/20 Light Grey Mixed	80%	20%	55-57½
2/20 Light Grey Mixed	90%	10%	57½-60
2/20 Light Grey All Wool			62½
2/20 Colored All Wool			65-67½
2/20 Bleached	80%	20%	67½
2/20 Bleached	90%	10%	70
2/20 Bleached All Wool			72½-75
2/23 Colored All Wool			67½
2/23 Bleached 90/10			72½
2/23 Bleached All Wool			75-77½
2/25 Light Grey Mixed All Wool			85-87½
2/25 Bleached All Wool			90-92½

*North Carolina, Taylorsville. C. M. Moore has the contract for the small addition to the Taylorsville Cotton Mill Company, recently reported. 960 spindles, 4 cards, and other machinery will be installed.

THE RAG AND SHODDY MARKET

There is a strong demand for rags at advanced prices, these conditions being due to the European war, and not to activity in the home market for goods. There have been heavy exports of rags to England. The supply from central Europe has been cut off. Added to these conditions is the wool embargo, and as a result the rag market is booming. The shoddy market lags behind because the consumption is confined to the mills of this country. There have been some large orders for shoddy placed by mills that are making army goods, but the regular trade has been light. Wool waste of all kinds is active and higher. If the embargo on wool continues manufacturers of goods will be forced to substitute shoddy, which will bring about a further advance in prices. The extraordinary conditions prevailing at present have placed a wool famine among the possibilities.

SHODDIES AND EXTRACTS

White knit	23-27
Red flannel	18-20
Red knit	20-21
Thibelts	17-18
Fine dark merino No. 1	14-15
Fine light merino	23-25
Fine black merino No. 2	15-16
Light delaine	20-21
Mixed delaine	12-13
No. 1 dark worsted	16-17
No. 2 dark worsted	14-15
Black worsted	16-17
Fine dark worsted clips	19-20
Blue serge, old	15-16
New blue clip	16-20
New black fine worsted clip	24-25
Light yarn, fine	28-30
Dark mixed, fine yarn	22-24
Dark blue hosiery clips, No. 1	17-20
Dark Blue hosiery clips, No. 2	14-16

NEW WOOLEN RAGS

Fine merchant tailors	10-11
Choice light worsted	15-16
Fine gray worsted	16-17
Coarse gray clips	11-11½
Fine dark worsted	10½-11½
Black worsted	17-18
Blue worsted	17-17½
Brown worsted	14
Blue serge	13½-14
Black serges	12½
Light serges	14½-15
Dark fancies	10-11
Dark serges	8½-9
New blue flannel	13-14
New scarlet flannel	18-20

SOFTS AND KNIT STOCK

Soft woolen, best	7-8
Red flannel	10½-11
White softs	19-20
Merinoes, fine light	14-15
Thibelts	10½
Knit stock, red	12-13
Light gray, underwear	9½-10
Coarse gray	14-14½
Blue knit	9½-10
Mixed hoods	7½-8½
White knit stock	21-22

You Save Enough Insurance to Pay for the Equipment

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

Pettes & Randall Co., 150 Nassau St., New York

OTTO KUNZE

2542 Seventh Avenue, New York City

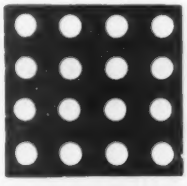
Our Specialty: Fibre Covered Shuttles Of Every Description

Samples sent on application

Woolen and Merino YARNS

Eaton Rapids Woolen Mills

EATON RAPIDS, MICHIGAN



Perforated Plates for Wool Washing

Rinsing and Carbonizing

In Special Metal

BECKLEY PERFORATING CO., Garwood, N. J.

OAK TANNED LEATHER BELTING

—AND—

PICKER AND ROLLER COVERING LEATHERS

CHARLES BOND CO., 520 Arch St., Philadelphia

Spun and Reeled Silks for Electrical Purposes

Cheney Silk Yarns

REELED silks and spun silks for electrical purposes can only be properly supplied by those having long experience in the requirements of this trade. Evenness of silk is essential. This is assured by getting the best silks from those people recognized as most reliable. The best is none too good. Any other may cause disaster. Cheney Brothers have had a greater experience in supplying yarns to this trade than any other manufacturer in the United States. Cheney spun and reeled silks are furnished in any form desired—on shuttle bobbins, paper tubes, cones, or warps; also ball warps. Quotations and samples on request.

CHENEY SILKS

CHENEY BROTHERS
Silk Manufacturers
4th Avenue and 18th Street, New York

National Silk Dyeing Co.

Main Office, PATERSON, NEW JERSEY, 140 Market Street

NEW YORK SALESROOM, 60 UNIVERSITY PLACE

Skein Silk Dyeing of every description for every class of textile manufacture.

Hosiery Dye—Boil-off, weighting and dyeing, treated especially to meet the requirements of the hosiery and knitting trade.

Piece Dyeing and Finishing—All silk and silk mixed goods.

Printing—Surface and warp printing.

WORKS:

Paterson, N. J. **Dundee Lake, N. J.** **Allentown, Pa.** **Williamsport, Pa.**

THE SILK MARKET

The silk market has undergone a sharp advance in prices since our last report. This is owing in part to the fact that a sudden demand for the raw product has manifested itself. Whether this activity of the market will continue or a further advance in prices ensue, cannot be stated at this time. Holders of silk in all of the markets are taking an active interest in the raw silk situation.

In Yokohama the market is reported firm and active. It is estimated that about 20,000 bales are in the market, which is a good supply of silk.

In Shanghai all the information obtainable shows that the market is firm, and that all offers for steam filatures have been withdrawn with prices nominal for futures.

The Milan market is reported unchanged and very little activity manifested. Only small lots are being sold in this country and only as needed.

This advance in prices came very suddenly and in three days raw silk had advanced 10 cents a pound.

The manufacturers in this country are not very busy except on novelties, for the reason that there is no activity in buying. No one knows what will be required for spring and fall.

Since the war began silk manufacturers have been hampered in many ways, as to the ability to get the raw product at the nominal price, and be able to figure with any certainty as to time required to receive shipments after the order had been given. This condition, however, has now passed to a certain extent, and silk can be obtained with promptness. Ribbon manufacturers are reported fairly busy, with a good spring business assured after January 1. Then it is expected that many buyers of the finished product will be in the market for both wide and narrow lines. It is to be hoped that this prophecy will prove true.

The dry goods districts are still complaining of lack of sales in the silk departments, although there seems to be a little more activity in buying. It is hoped by the manufacturers, and the retail trade in general, that as spring approaches there will be much more demand for the finished product. Bengalines, failles, velvets and printed silks are still popular. While it is predicted that taffetas are to have a good call the coming season.

All in the silk industry are hoping for more activity in the industry to occur after January 1st, and seem under trying conditions optimistic as to the future.

Below are prices current:

European

Grand Extra Classical Piedmont	3.90-4.00
Extra Classical Italian 12/14 12/16	3.55-3.60
Classical Italian 13/15 24/26	3.35-3.40
Best No. 1 Italian 13/15 14/26	3.30-3.35

6 months' basis

VILLA, STEARNS COMPANY
Telephone, 6174 Gramercy
American Woolen Building
221 Fourth Avenue, New York
RAW AND THROWN SILK
Silk on Spools, Cones, Quills, Beams
DYED SILK FOR ALL PURPOSES
Philadelphia Office:
519 Bourse Building
Providence Office:
Howard Building

KROUT & FITE MANUFACTURING CO.,
MANUFACTURERS OF
Silk, Cotton and Mercerized Narrow Fabrics
SPOOL TAPES A SPECIALTY
TELEPHONE CONNECTION
OFFICE AND MILL ALLEGHENY AVE. AND EMERALD ST., PHILADELPHIA

Inferior Operative won the contest because of Cooper Hewitt Lighting

Facts and Figures secured by the superintendent of a textile mill prove that an inferior girl-operative won in a weaving competition by means of Cooper Hewitt Lighting over her competitor (rated as first class) who worked by another method of lighting previously considered ideal for the purpose.

By Such Evidence, on the face of it the entire quality-and-quantity-production efficiency of a mill can be materially improved and increased by Cooper Hewitt Lighting—more margin for profit, quicker deliveries, satisfied customers.

Textile Mill Engineers and Superintendents who have watched the results which follow Cooper Hewitt lamp installations indorse them strongly.

Now is the time to inquire into this important subject. Get Bulletin 738.

Cooper Hewitt Electric Company

8th and Grand Sts., Hoboken, N. J.

Boston, 161 Summer St.
Chicago, 215 Fisher Bldg.
Pittsburg, Westinghouse Bldg.
Cincinnati, First Nat'l Bank Bldg.
Cleveland, Engineers' Bldg.
Minneapolis, Andrus Bldg.
Detroit, Ford Bldg.
Philadelphia, 124 South 8th St.
St. Louis, Central Nat'l Bank Bldg.

SAUQUOIT SILK MFG. CO.

INSULATING AND BRAIDING SILKS

ORGANZINE, TRAM AND HOSIERY SILKS

Fast Dye Organzines for Woolen Manufacturers a Specialty

Mills: Bethlehem, Pa., Philadelphia, Pa., Scranton, Pa. New York Representative, Wm. Ryle & Co., 225 Fourth Ave.
Philadelphia Office, 4015 Clarissa St., Nicetown
Chicago Office, 206 So. Market St. **Boston Office, 78 Chauncey St.**

SILK THROWING AND WASTE SILK SPINNING

By RAYNER

Deals with the preparation of yarn from the raw silk; also waste silk spinning and the utilization of waste products. For silk manufacturers or workers, or for men who use silk in connection with cotton, worsted or wool. 158 pages; 117 illustrations; cloth. **Price $2.50, prepaid**

LORD & NAGLE CO., Textile Publishers, 144 Congress St., Boston, Mass.

WILLIAM RYLE & CO.,

FOREIGN AND DOMESTIC

SPUN SILK YARNS and NOILS

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

225 Fourth Ave., Corner 18th St., NEW YORK CITY

Japan

Filature Kansai Extra Extra	3.50-3.55
Filature Kansai Extra 13/15	3.30-3.35
Filature Shinshu Extra 13/15	3.25-3.27½
Filature Kansai Best No. 1	3.10-3.15
Filature Kansai No. 1 13/15	3.00-3.10
Filature Shinshu No. 1 13/15	3.05-3.07½
Rereels No. 1 13/16	Nominal
Rereels No. 1 1/2 13/16	Nominal
Rereels No. 1 1/2-2	Nominal

6 months' basis

China

Canton XXA 14/16 (new silk)	2.40-2.45
Canton XXB 14/16	2.30-2.35
Tsattle Blue Dragon & Flying Horse	2.60-2.65
Tsattle Kun Kee Mars No. 1	2.35-2.40
Tussah Filature Eight Cocoons No. 1-2	1.00

6 months' basis

SPUN SILK

This market is still very dull with no change in prices. The manufacturers are optimistic as to the future, but no great amount of spun silk is at present moving. The prices will probably not advance for some time to come, although nothing can be predicted on this point at this time. The prices follow:

60/2	3.80
50/2	3.70
40/2	3.60
30/2	3.45
20/2	3.35
10/2	3.25

ARTIFICIAL SILK

The artificial silk industry is still very quiet, and until the war in Europe has ceased the general opinion in the trade is that business will be dull and inactive. If the braid manufacturers get busy again, this trade will benefit by the situation, but no one at the time can say just how much braid will be in demand.

Below are prices current and are the same as last report:

150 Deniers English A—Bleached	1.95
150 Deniers English B.—Bleached	1.85
150 Deniers English C.—Bleached	1.67

SILK.

New Mills.

*New Jersey, Bayonne. The new silk mill established here by Aronsohn & Bloom Silk Company of Paterson, is located on W. 23rd St. There are 143 looms in the plant for weaving broad silks. The Paterson address is 99 Cliff St.

A. P. Villa & Bros.

Raw, Thrown and Dyed Silks

Silk on Quills or Beams. Hosiery Silk on Cones

Societa per la Filatura dei Cascami di Seta, Milan (Italy)
Cascami Silk Spinning Company of America

"Cascami"

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SILK.

New Mills.

*New York, Jort Jervis. Kattermann & Mitchell Company will have 250 looms in the new silk mill being constructed here. The new factory will be modern in every respect and will have electric power equipment.

Enlargements and Improvements.

Connecticut, Norwich. Additional looms have been installed in the Norwich plant of Schwarzenbach Huber Company, known as the West Side Silk Mill, and the equipment is now 200 looms. Broad silks are manufactured.

Connecticut, Shelton. The work of moving the equipment of the Specialty Weaving Company has been completed and the space will be occupied by Sidney Blumenthal & Co., Inc., who purchased the property several months ago. According to E. & H. Levy, owners of the Specialty Weaving Company, they may relocate in Shelton next season.

New Jersey, Paterson. A. Schottland, 26 Ramapo Ave., has added several looms and now has equipment of 80 looms for weaving broad silks.

New Jersey, Paterson. The Diamond Silk Company have finished moving their machinery from the Hall Mill to the Arohnson Mill. Forty new looms were added, giving a total of 90 looms in the plant.

New Jersey, Paterson. A. D. Cohen is placing 24 box looms besides the preparatory machinery in his plant in the Arohnson Mill.

New Jersey, Union Hill. New winding and warping machinery is being installed in Mill No 2 of the Hasco Dyeing Company of Franklin St. They report that business is improving and is very satisfactory along their lines.

New York, Binghamton. The Ballard Silk Company has started on a day and night schedule. Plans are being made for an addition, 40 by 80 feet, which will be ready April 1. This enlargement will increase the weaving capacity to 70 looms.

*New York, Olean. John Dunlop Sons, of Spring Valley, N. Y., have increased the equipment of the old Feder Silk Throwing Mill to 10,000 spindles and are operating it under the name of the Dunlop Silk Mills, as a branch of the plant at Spring Valley. The New York office is at 254 4th Ave.

*Pennsylvania, Allentown. Two hundred more ribbon looms will be installed in the Allentown plant of Kaltenbach & Stephens on the completion of the new weaving mill. This will make a total of 700 looms in this plant. Construction contract has been awarded to the F. L. Dillon Construction Company for the enlargement which will be of brick and steel, 94 by 350 feet. The estimated cost is $40.000. The location is at E. South and Carlisle Sts.

Pennsylvania, Allentown. The addition being built to the plant of the Rionor Silk Company, recently noted, will practically double the space now occupied. It will be completed shortly.

*Pennsylvania, Macungie. Further increases are contemplated by the Macungie Silk Company following the increase in the capital stock from $10,000 to $25,000. A 1-story addition was built during the summer with capacity of 20 ribbon weaving looms.

Pennsylvania, Shamokin. At the annual meeting of the Perfect Silk Throwing Company action will be taken on a proposition to increase the capital stock from $20,000 to $40,000. Reports have been given previously of a plan to build a new mill at Elysburg, Pa., and of the project to establish one or two other branches.

*Rhode Island, Pawtucket. The additional mill constructed by the Royal Weaving Company gives an increase in the equipment from 1,700 broad looms to 2,200 broad looms.

Mills Starting Up.

New Jersey, Paterson. The plant of Ackerman Bros., 394 E. 21st St., equipped for tussah silk throwing, which has been idle for about a year, is to be started up by L. W. Ackerman.

*Pennsylvania, York. Manufacturing has been started in the new plant of the Franklin Silk Mill, B. Edmund David, proprietor. This plant is located on West Princess St. in West York, and was formerly occupied by the Ashley & Bailey Company. The property was purchased several months ago by Mr. David and extensive repairing and remodeling operations have since been going on. Samuel Rutland is superintendent.

.....

Mills Shutting Down.

New Jersey, Paterson. The Cocker & Van Splinter Throwing Company, who conducted a commission throwing business in the Addy Mill, have discontinued operations and gone out of business.

New Jersey, Paterson. Dexter, Lambert & Company are closing down their broad silk department indefinitely. It is generally understood here that the plant may be sold when business improves.

MISCELLANEOUS.

.....

Canada, Ontario, Toronto. John M. Lalor is conducting, under his own name, the cotton, jute and mattress felt business at 414-20 Eastern Ave., corner Empire Ave., formerly known as the Woods Flocks Mills. He contemplates making some additions to the equipment.

*Canada, Quebec, Coaticook. Charles Niedner's Sons, of Malden, Mass., have removed their Canadian branch from Quebec to the new quarters in Coaticook and increased the equipment from 22 looms to 28 looms. Linen fire hose is manufactured.

*Connecticut, East Killingly. The new machinery to be installed in the plant of the International Cotton Mfg. Company will increase the output about 50 per cent. Absorbent cotton and specialties are manufactured and employment is given to 75 hands.

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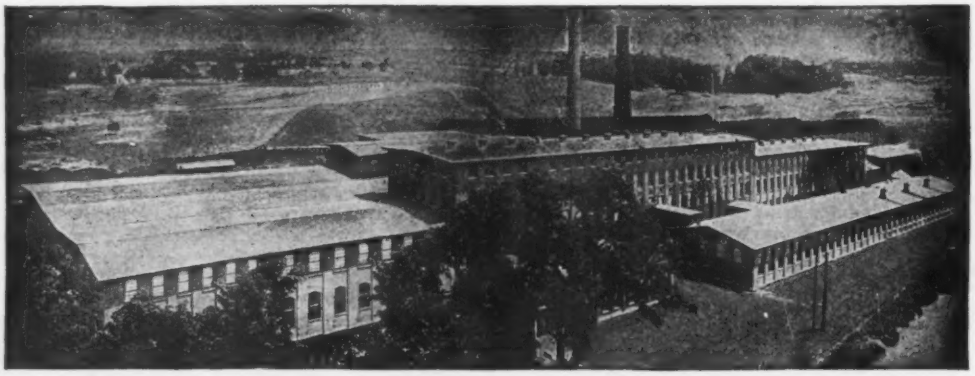

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ASSETS, January 1, 1914.....$33,139,915.81
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DYESTUFFS AND CHEMICALS

The unsettled conditions in the dyestuff and chemical trades caused by the European situation make it impossible to get quotations which would be of any value to our readers. The dyestuff and chemical list of quotations will therefore be omitted until this trade is again on a normal basis.

FIRES.

.....

Canada, Ontario, Lindsay. The plant of the Horn Bros. Woolen Co., Ltd., has been destroyed by fire. Only recently the capital stock was increased and another building was taken over and equipped. They manufactured mackinaws, ladies' cloakings, blankets, woolen yarns, hosiery, underwear and sweaters on 5 sets of cards, 34 looms, and 20 knitting machines.

Connecticut, Bridgeport. A fire in the basement of the Bias Narrow Fabric Company was extinguished by the automatic sprinkler system with small loss.

Connecticut, East Hampton. Fire destroyed a storehouse owned by the Summit Thread Company. The loss is reported to be $5,000 and is largely on cotton yarn. The operation of the plant is not affected and the mill is running as usual. The structure will be rebuilt at once it is thought.

Massachusetts, Fall River. A fire in the machinery wiping waste department of the Estes Mills, which originated in a picker, caused damage estimated at several thousand dollars.

Michigan, Hastings. Fire in the plant of a local wool boot company caused loss of $30,000. The plant is owned by the United States Rubber Company, of New York.

New York, Brooklyn. A fire on the top floor of the 2-story building at 179 Van Brunt St., occupied by the Atlas Embroidery Works, caused some damage. The Atlas Embroidery Works has capital stock of $53,500 and manufactures embroideries.

Pennsylvania, Philadelphia. Fire starting in one of the drying rooms of the Buffalo Dye Works, B St., above Westmoreland, supposedly through spontaneous combustion, damaged the plant to the extent of about $25,000. The damaged portion of the plant will be repaired at once.

Pennsylvania, Philadelphia. $25,000 is said to be the damage done to the plant of Erstling Bros. Knitting Mill Co. by fire which practically wiped out the top floor of the building at Mascher St. and Lehigh Ave. They manufactured women's underwear, vests and union suits on 20 knitters and 16 sewing machines. The equipment of other tenants in the mill was also more or less damaged by water.

Pennsylvania, Philadelphia. A fire in the plant of H. G. Fetterolf, manufacturer of wilton rugs and carpets at Wayne Junction, is reported as having damaged the machinery. The origin of the fire has not been determined.

Barrett Specification Roofs

Shop extension of the Illinois Steel Co., Chicago, Ill.
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A Modern Shop and a Modern Roof

Here is a picture of The Barrett Specification Roof on the big new shop of the Illinois Steel Company in Chicago, laid over a concrete deck.

Cut through this roof at any point and you will find six layers of pitch and five of felt, for the method of procedure in the laying of the roof is so carefully defined in The Barrett Specification that, if it is followed, it is not possible to find any spot in the roof which does not have its full quota of pitch and felt.

This type of roofing was selected for the building because its first cost is lower than that of any other permanent form of roof covering and the cost of maintenance is absolutely nothing.

This combination of low first cost and no maintenance cost explains why there are *more* Barrett Specification Roofs on permanent structures than any other kind.

Another important feature is the fact that Barrett Specification Roofs take the base rate of fire insurance. In case of fire from within they form a continuous air-proof fire blanket.

All first-class structures, such as city dwellings, office, railroad and commercial buildings of all kinds should have Barrett Specification Roofs as a matter of real protection and sound economy.

A copy of The Barrett Specification, with roofing diagrams, free on request.

Special Notice

We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding.

If any abbreviated form is desired, however, the following is suggested: ROOFING—Shall be a Barrett Specification Roof, laid as directed in printed Specification, revised August 15, 1911, using the materials specified and subject to the inspection requirement.

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Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

MILL STOCKS

Owing to the disturbed financial relations, current quotations of mill stocks are nominal. Following are the quotations previous to the breaking out of the war:

NEW BEDFORD MILLS

	Bid.	Asked.
Acushnet Mill	137½	...
Beacon Mfg. Co., com.	102	...
Beacon Mfg. Co., pfd.	...	115
Booth Mfg. Co., com.	...	21
Booth Mfg. Co., pfd.	...	47½
Bristol Mfg. Co.	...	67½
Butler Mill, com.	...	90
Butler Mill, pfd.	...	100
City Mfg. Co.	...	92
Dartmouth Mfg. Co., com.	127½	...
Dartmouth Mfg. Co., pfd.	97½	...
Gosnold Mfg. Co., pfd.	...	89
Grinnell Mfg. Co.	...	180
Holmes Mfg. Co., com.	104	...
Holmes Mfg. Co., pfd.	105	...
Kilburn	118	...
Manomet	...	114½
Nashawena Mills	...	66
N. B. Cotton Mills Co., com.	100	98½
N. B. Cotton Mills, pfd.	96	...
Neild Mfg. Co.	...	95
Nonquitt Spinning Co.	...	94
Page Mfg. Co.	...	77½
Pierce Mfg. Co.	295	300
Pierce Bros., Ltd.	100	...
Potomska Mills	115	...
Quissett Mills, com.	...	98
Quissett Mills, pfd.	100	102½
Sharp Mfg. Co., com.	...	85
Sharp Mfg. Co., pfd.	...	100
Soule Mills	...	80
Taber Mills	...	100
Wamsutta Mills	115	119
Whitman Mills	114½	123

SOUTHERN MILLS

	Bid.	Asked.
Abbeville	85	100
American Spinning Co.	155	...
American Spinning Co., pfd.	100	...
Arkwright Mills	...	100
Aragon, com.	59	...
Avondale	120	126
Arlington	130	...
Brogan Cotton Mills (new series)	...	81
Brookside	...	...
Cannon	125	...
Cabarrus	120	...
Chadwick-Hoskins	...	...
Chadwick-Hoskins, pfd.	...	101
Chiquola Cotton Mills, pfd.	80	...
Clifton, com.	80	...
Clifton, pfd.	96	100
Clara	100	...
Cliffside	190	...
Columbus Manufacturing Co.	...	85
Darlington	75	83½
Drayton	29	...
Erwin, pfd.	...	105
Easley	...	125
Exposition	...	210
Florence	125	128
Gaffney Manufacturing Co.	59	...
Gibson, com.	109	110
Gluck	...	100
Graniteville, S. C.	140	152
Grendle	...	96
Glenwood	...	150
Glen Lowry, pfd.	...	76
Highland Park	200	203
Highland Park, pfd.	...	102
Hartsville	175	195
Hartsville, pfd.	...	100
Henrietta Mills	...	117
Inman, com.	...	108
Inman, pfd.	...	100
Kesler	...	160
Lancaster Cotton Mills	130	...
Lancaster Cotton Mills, pfd.	96	...
Lanet	...	112
Laurens	127	136
Limestone	...	126
Lockhart, S. C.	...	72½
Loray Mills, pfd.	...	86
Modena	...	150
Mollohon	...	101
Monarch, S. C.	115	...
Newberry	125	...
Norris Mills	...	121
Ninety-six	130	140
Orr	...	86
Ozark	100	110
Parker Mills, com.	7	10
Parker Mills, pfd.	30	35
Parker Mills, guar.	...	88½
Pacolet Mfg. Co., com.	...	108
Pacolet Mfg. Co., pfd.	100	...
Patterson	129	...
Pelzer Manufacturing Co.	125	164
Piedmont Manufacturing Co.	150	167
Pell City, Ala.	...	80
Poe, W. F., Manufacturing Co.	100	103
Riverside Manufacturing Co.	...	78
Salisbury	150	...
Roanoke Mills	...	156
Saxon	114	...
Spartan	109	...
Toxaway	...	78
Union Buffalo, first pfd.	34	51
Union Buffalo, second pfd.	...	10
Warren Mfg. Co., com.	78	...
Warren Mfg. Co., pfd.	...	107
Washington Mills	7	...
Washington Mills, pfd.	100	...
Woodside Mills Co., com.	...	98½
Woodside Mills Co., pfd.	...	80
Woodside Mills Co., guar.	...	101
Watts	...	85
Williamson	...	125
Ware Shoals	70	...
Whitney	110	120
Wiscasset	140	150
Woodruff	...	107
Woodlawn	120	126
Young Hartsell	70	...

OTHER NEW ENGLAND MILLS

	Par Value.	Last Sale.
Amoskeag Mfg. Co., com., N. H.	100	62
Amoskeag Mfg. Co., pfd., N. H.	100	99½

Androscoggin Mills, Me.	100	137
Arlington Mills, Mass.	100	80
Appleton Co., Mass.	100	172
Bates Carpet Co., Me.	100	213¼
Bigelow Carpet Co., Me.	100	213¼
Boston Duck Co., Mass.	700	1280
Boston Mfg. Co., Mass.	100	85
Cabot Mfg. Co., Me.	100	100
Chicopee Mfg. Co., Mass.	100	90
Continental Mills, Me.	100	75¼
Dwight Mfg. Co., Me.	100	1021¼
Edwards Mfg. Co.	100	99
Essex Co., Mass.	100	187¼
Everett Mills, Mass.	100	112¼
Fisher Mfg. Co., Mass.	100	125½
Franklin Co., Me.	100	201¼
Great Falls Mfg. Co., N. H.	100	172¼
Hamilton Woolen Co., Mass.	100	95
Hamilton Mfg. Co., Mass.	100	77½
Hill Mfg. Co., Me.	100	90¼
Jackson Co., N. H.	1000	985
Lancaster Mills, Mass.	100	75
Lawrence Mfg. Co., Mass.	100	151¾
Lockwood Co., Me.	100	97
Lowell Bleachery, Mass.	100	125
Lowell Hosiery, Mass.	100	40
Lyman Mills, Mass.	100	120
Massachusetts Cotton Mills, Ga.	100	93⅛
Massachusetts Cotton Mills, Mass.	100	116
Merrimack Mfg. Co., com., Mass.	100	24⅜
Merrimack Mfg. Co., pfd., Mass.	100	83½
Middlesex Co., Mass.	100	55
Middlesex Co., pfd., Mass.	100	75
Monadnock Mills, N. H.	100	100
Nashua Mfg. Co., N. H.	500	672½
Naumkeag Steam Cot. Co., Mass.	100	172
Newmarket Mfg. Co., N. H.	100	95
Otis Mfg. Co., Mass.	1000	1852½
Pacific Mills, Mass.	100	107
Pepperell Mfg. Co., N. H.	100	305
Plymouth Cordage Co., Mass.	100	228
Salmon Falls Mfg. Co., N. H.	300	150
Shaw Stocking Co., Mass.	100	75
Suncook Mills, N. H.	100	20
Thorndyke Mfg. Co., Mass.	1000	1305
Tremont & Suffolk Mills, Mass.	100	100⅜
Waltham Bleachery & Dye Works, Mass.	100	140
York Mfg. Co., Me.	100	85

MISCELLANEOUS.

*New Jersey, Paterson. Work on the addition to the plant of the Oriental Silk Printing Company in Haledon, which was held up a few months ago on account of unfavorable conditions, has been resumed and about the end of the month the enlargement, which will be 200 by 50 feet, will be ready for occupancy. Workmen are now engaged on the brick work. Albert Gleek & Son are the contractors and they have promised that the addition will be in readiness for the installation of machinery within a month. The Oriental Silk Printing Company prints silk warps, draperies, silk and silk mixed goods. The New York office is at 95 Madison Ave.

*New Jersey, Paterson. The new addition being completed by the Oriental Silk Printing Company in Haledon will be used as a color shop. There will be no new printing machinery. Work was started on the enlargement several months ago, but the operation was held up on account of unfavorable conditions. The first of this month construction work was resumed and by the end of the month the enlargement, which will be 200 by 50 feet, will be ready for occupancy.

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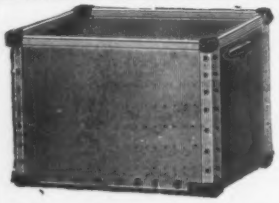
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MISCELLANEOUS.

*Kentucky, Covington. It is reported the proposed addition at the Reliance Textile & Dye Works will cost about $25,000.

Massachusetts, East Braintree. The East Braintree Bleaching & Dye Works, Henry McCusker, proprietor, which have been remodeling and equipping a plant here for several months past, are now fully prepared to bleach and finish cotton piece goods, including jeans, twills, drills, muslins, cambrics, nainsooks, and various kinds of shoe goods. Henry McCusker attends to the buying.

Massachusetts, Holyoke. D. Mackintosh & Sons Company, manufacturers of white and colored carded and combed cotton have added the manufacture of absorbent cotton.

*Massachusetts, New Bedford. Operations have been started at the new waste plant of William C. Jones Company. The concern was incorporated several months ago with capital stock of $100,000 and acquired a building on Nash Road, formerly used as a box factory, which has been equipped for handling cotton waste. A new concrete floor has been laid in the basement so that the plant consists of three floors, 255 feet long by 70 feet wide. The concern grades, cleans and prepares waste from the mills in this city and vicinity. The plant has a railroad siding which can accommodate 20 cars and there is plenty of room for future growth. The Boston office is at 200 Summer St. W. H. Dixon, Manchester, Eng., is president; P. A. Greene, Boston, is treasurer and buyer; and John McCullough is the New Bedford head of the business.

*Massachusetts, Webster. The new engine being installed in the Stevens Linen Works bleachery is of 150 h. p. capacity, and is to replace an old one which is being taken out. Linen crash is manufactured on equipment of 7,600 spindles and 640 looms. Henry S. Shaw is treasurer and buyer, John M. Crawford is agent, and H. Wadsworth Crawford, superintendent.

*Massachusetts, Westboro. The 20 new looms being installed in the plant of the Westboro Weaving Company are being set up in the basement of the mill on Spring Street. Narrow fabrics, tapes and similar lines are manufactured.

Massachusetts, Westford. It is expected the cotton and camel's hair bagging plant of D. H. Sheehan will be moved from Westford to Lowell, and increases made. At present three looms are operated. The product is used for oil and cider presses.

Massachusetts, Whitinsville. The Whitin Machine Works are building an addition to the foundry, 50 feet wide by 200 feet long, which will increase the capacity of this department about 50 per cent.

Massachusetts, Worcester. Contract has been awarded by the Mills Woven Cartridge Belt Company to E. J. Cross Company for the construction of an addition which will cost approximately $25,000. This company was recently reported as ordering a number of new looms.

Interruption of Production

is recognized by textile mill operators as the most costly element of repairs.

Allis-Chalmers TEXTILE MOTORS

are so liberally designed and so sturdily constructed that they will operate for years without need of repairs providing they are properly supplied with oil while in service.

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For all Canadian business refer to
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ATTENTION

Mill Managers, Superintendents and Overseers

YOU are keen for information that bears on the operation and maintenance of your mill at ***reduced cost,*** made possible by increased efficiency. To aid you in your problem we have just published a text-book dealing with the operation of textile machinery at minimum cost for maintenance and lubrication—a book which clever mill-men tell us contains mighty valuable information.

IT is entitled "Lubrication of Textile Machinery" and we have reserved a copy for YOU. If you will promptly send us your address we will be happy to mail YOUR copy. No obligation whatever.

New York and New Jersey Lubricant Co.

165 Broadway, New York. 1430 Michigan Ave., Chicago, Ill.

Rhode Island, Pawtucket. New equipment installed in the plant of the Tubular Woven Fabric Company increases the capacity about 15 per cent. They manufacture non-metallic flexible woven conduit for the electrical trade and have 40 tubular looms. William H. Thornley is president; William Handley, general manager and buyer; and Joseph A. Kennedy, superintendent. A. Hall Berry, 97 Warren St., N. Y., sells the product.

Rhode Island, Pawtucket. Manufacturing has been resumed in the weaving and finishing departments of the American Textile Company, laces. The plant closed a short time ago for a shutdown which at the time was termed indefinite.

*Rhode Island, Warren. James H. French, of the Granite Mills, Fall River, and Stephen L. French, also of Fall River, are president and treasurer respectively of the French Mfg. Company organized several months ago with capital stock of $35,000 to do a business of winding and twisting yarns. As noted in previous reports a floor in one of the buildings of the Cutler Mills has been leased. Work was started this week on a small scale.

*Rhode Island, Warren. It is rumored that the Swiss Textile Company will award the contract for the construction of its proposed new mill within a few days. The plans have been ready for some time.

*Rhode Island, Warren. The Warren Novelty Mills, the new concern which it was noted recently would manufacture cotton rope and similar goods, occupies a part of the lower floor of Cutler Mill, No. 2, where a special clothes line is being made. At present this is the only product that the concern will make. The Estes Mills of Fall River are financing the project. It is not a corporation. Under the name of the Warren Novelty Mills the Estes Mills are conducting the business on a sort of partnership basis with Louis L. Cohen and his sons. The Cohens came to the Estes Mills for assistance and they decided to give the proposition a trial. The office headquarters are in Fall River. The Warren Novelty Mills should not be confused with the new French Mfg. Company reported organized two or three months ago with capital stock of $35,000, and which it is understood is preparing to conduct a winding and twisting business, leasing a floor in the Cutler Mills.

Tennessee, Nashville. S. D. Clark, 213 Third Ave., North Nashville, and associates, contemplate starting a small plant for the manufacture of cotton twine and are interested in information on necessary machinery. Mr. Clark will be manager, and advises that all new equipment for the manufacture of cotton cordage and twines will be required.

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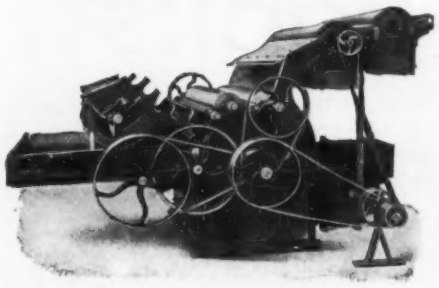

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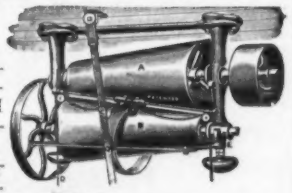

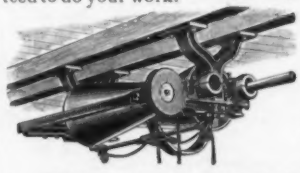

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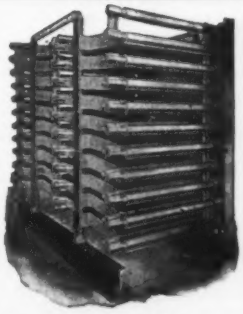

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Advanced Textile Design, *Watson*	$4 00
Analysis of Woven Fabrics, *Barker and Midgley*	3 00
Art of Soap Making, *Watt*	3 00
Calculations in Yarns and Fabrics, *Bradbury*	1 25
Carpet Manufacture, *Bradbury*	3 00
Color in Woven Design, *Beaumont*	6 00
Drying by Means of Air and Steam, *Hausbrand*	2 00
Flax, Hemp and Jute Spinning and Twisting, *Carter*	3 00
Improved Slide Rule, *Hogg*	3 50
Introduction to Study of Textile Design, *Barker*	2 50
Jacquard Weaving and Designing, *Bell*	4 00
Manual of Weave Construction, *Kastanek*	1 00
Preliminary Operations of Weaving, *Nesbitt*	2 50
Science of Knitting, *Tompkins*	3 00
Silk Throwing and Waste Silk Spinning, *Rayner*	2 50
Simplex Tables	50
Spinning and Twisting of Long Vegetable Fibres, *Carter*	5 00
Story of Textiles, *Walton*	3 25
Technical Testing of Yarns and Fabrics, *Herzfeld*	3 50
Textile Design, *Woodhouse and Milne*	3 25
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Textile Design and Color, *Watson*	2 50
Textile Fibres, *Matthews*	4 00
Textile Soaps and Oils, *Hurst*	3 00
Textiles, *Barker*	2 00
Warp Preparation and Weaving, *Nelson*	2 25
Waterproofing of Fabrics, *Mierzinski*	2 50
Weaving, Plain and Fancy, *Nelson*	1 25

Cotton Manufacture

Carding and Spinning, *Ivey*	$1 00
Chemistry of Tape Sizing, *Cooper*	1 50
Cotton Carding, *Lindsay*	50
Cotton Cloth Designing, *Holmes*	2 00
Cotton Combing Machines, *Thornley*	3 00
Cotton Manual, *Broadbent*	75
Cotton Mill Machinery and Calculations, *Parker*	1 50
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Cotton Spinning (3 vols.), *Taggart*	7 50
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Humidity in Cotton Spinning, *Dobson*	1 50
Loomfixing and Weaving, *Ivey*	1 25
Mule Spinning, *Thornley*	3 00
Plain Series of Cotton Spinning Calculations, *Cook*	1 00
Practical Cotton Calculations, *Whitworth*	1 00
Structure of the Cotton Fibre, *Bowman*	3 00
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Woolen and Worsted Manufacture

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Finishing of Textile Fabrics, *Beaumont*	4 00
How to Make a Woolen Mill Pay, *Mackie*	2 00
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Wool Carding and Combing, *Barker and Priestly*	1 50
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Woolen and Worsted Finishing, *Tymmerman*	2 25
Worsted Overlooker's Handbook, *Buckley*	50
Worsted Preparing and Spinning, (2 vols.), *Bradbury and Buckley*	3 00

Bleaching, Dyeing, Printing, Finishing, Etc.

Aniline Black, *Noelting and Lehne*	$5 00
Bleaching and Dyeing of Vegetable Fibrous Materials, *Hubner*	5 00
Bleaching of Linen and Cotton Yarn and Fabrics, *Tailfer*	5 00
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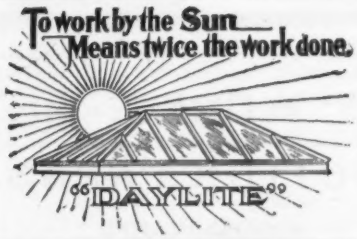

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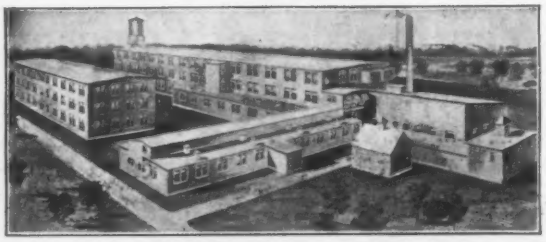

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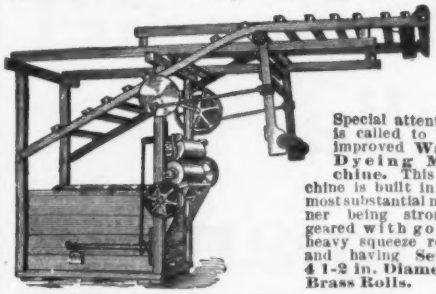

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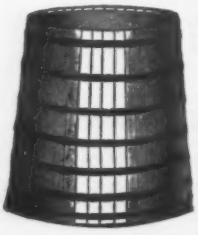

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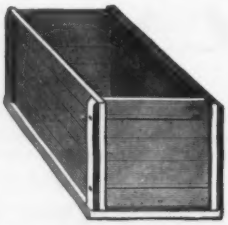

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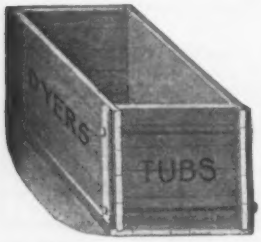

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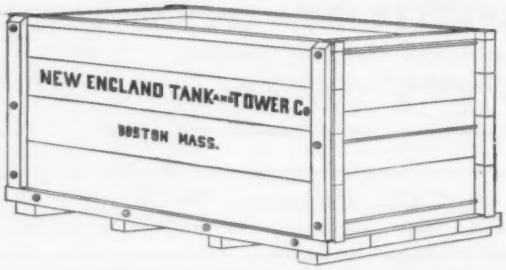

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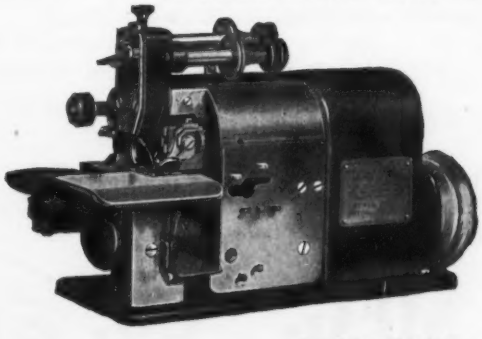

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of the

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are sometimes overlooked

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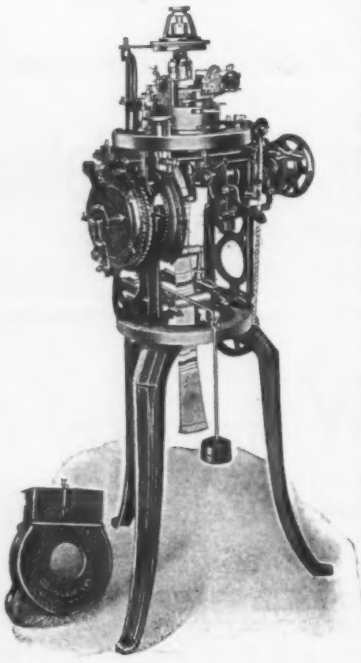

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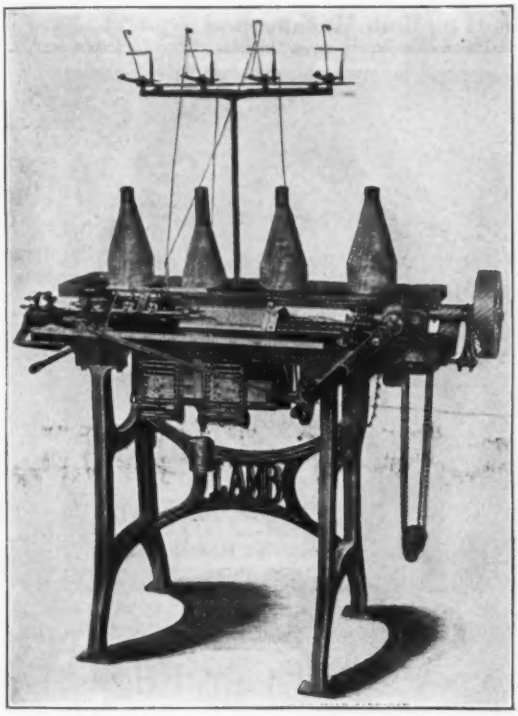

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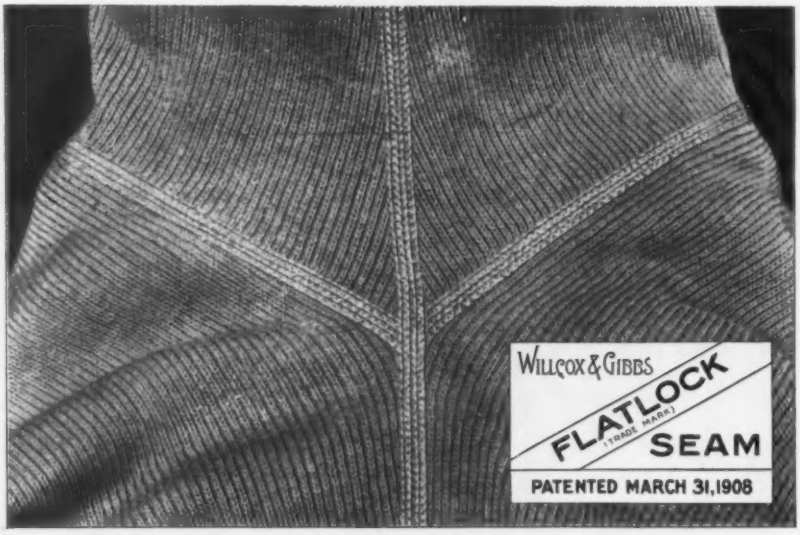

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A Perfect Union of Abutted Cut Edges Forming a Very Strong, Soft and Smooth

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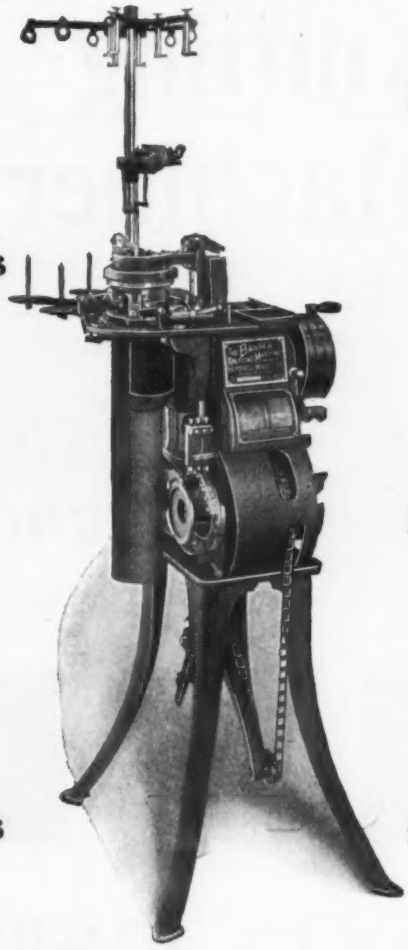
Banner Full Automatic Hosiery Machine

A FEW OF THE NEW FEATURES

Over **18,000** Banner Machines in successful operation



All working parts accessible from *front* of machine

Five Yarn Changing Levers

Automatic Transferring Device

New and *Novel* Device for High Splice and Double Sole Slackening

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High Speed in *Heel* and *Toe*

Single Pick

Average production 100 machines a week

Over 4800 machines sold and delivered in 1913 as compared with 3700 in 1912

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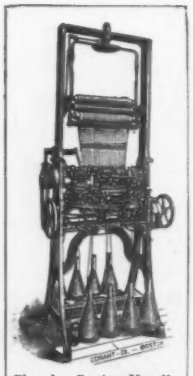
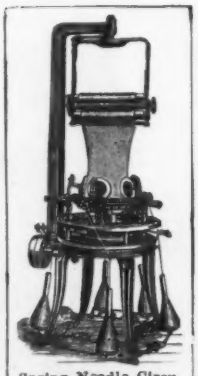


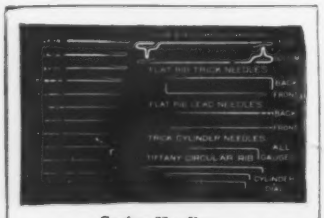
Circular Spring Needle Rib Top Machine.



Spring Needle Circular Plain Body Machine.

Spring Needle Cylinder Rib-Top Machines

For making Cuffs, Drawer Bottoms and Shirt Borders.



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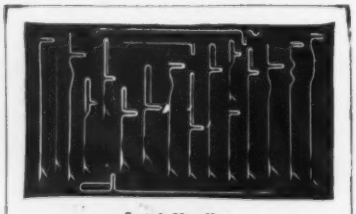
Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, Etc.



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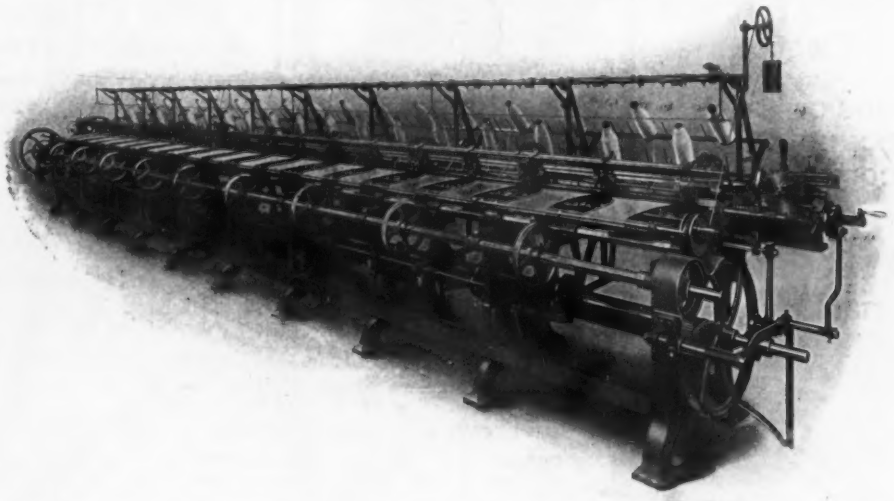

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Best Constructed, Most Economical and Productive Machines on the Market

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A NEW, SUSPENDED CUP FEED, MACHINE FOR SEAMING FASHIONED UNDERWEAR AND SWEATERS

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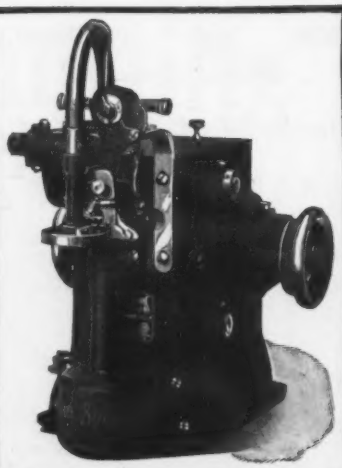
DOUBLE THREAD INTERLOCK SEAM

Perfectly Flat and Elastic.

ENDS OF SEAMS LOCKED GIVING LOOPER FINISH.

HIGHEST DEVELOPMENT in machines of this character.



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BOTH FEEDING CUPS ACTUATED

Insuring Positive Feed Upon Both Selvages, Overcoming the objectionable puckered seam

SUSPENDED FEEDING CUP greatly facilitates the handling of work.

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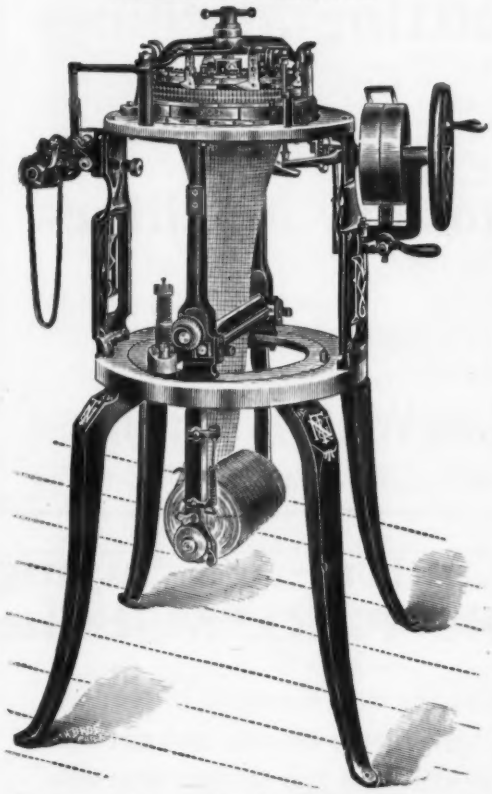

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Quality of Fabrics and Production UNEXCELLED

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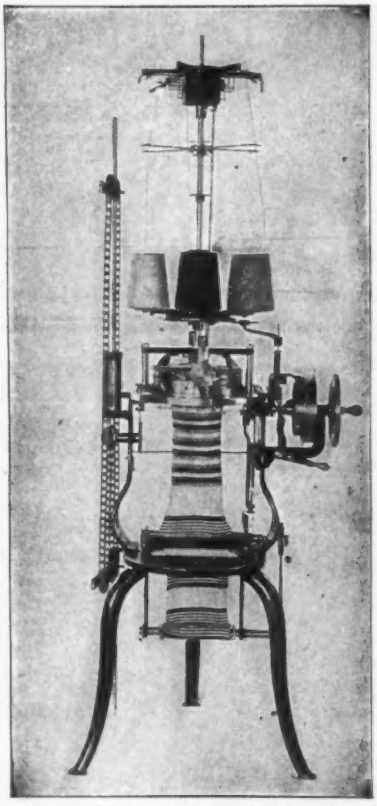
Spring and Latch Needle Machines

for Both Rib and Plain Work
Economically Producing
A GREAT VARIETY OF FABRICS



Improved Automatic 3-Colored Plain Striper.

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Improved Spring Needle Underwear Machine for Shirts, Drawers, Jersey Cloth, Astrachan and Stockinet.

Frames of any guage and diameter required can be furnished from 2½ to 36".

Patent removable hardened Wing Burr Wheels.

Patent Thread Stop Motion can be fitted to 20" and 40" frames and are specially adapted for making fine Jersey Cloth and Stockinet.

Our flat machine is adapted for knitting collarettes.

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For the sweater, etc. trade

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Full Fashioned Hosiery Machines

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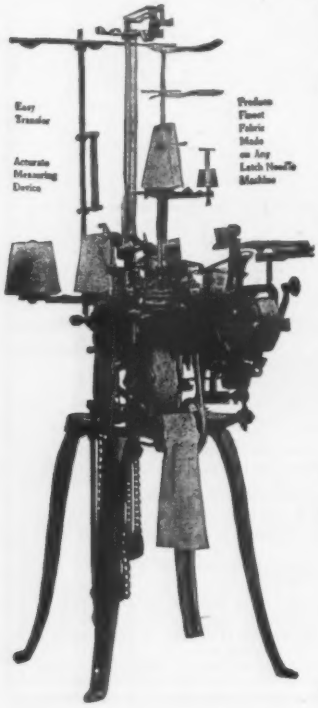

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"We are running this machine beside another popular knitter on silk and art silk plaited hosiery. On the 'P.&O.' machine we are making less menders, a more even fabric and bigger production. In fact it is the best machine we have in our mill."

SAVES 10% ON YARN

Makes Ladies' or Half Hose; garter top; no ravel, silk plaited or mercerized leg; high splice, double sole; advanced toe; linen or mercerized heel and toe.

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The Reece Button-Hole Machine

For Cutting and Stitching Straight Double-Barred Buttonholes

This machine is designed for cutting and stitching straight double-barred buttonholes without eyelets, from ⅛ of an inch in length up to 1 inch, in knit goods, shirts, shirtbands, collars, cuffs, etc., also on knit goods of all kinds. It is superior to all other machines, as it is the *only single thread* buttonhole machine on the market doing away with the bobbin or under thread, thereby making a great saving in the use of thread, and *it will produce more than double the quantity of work of any other machine*, thus saving the employment of an extra operator and the space of an extra machine. The quality of the work produced is superior to any other buttonhole, from the fact that the stitch is elastic, which is an important factor in knit goods. This machine is automatic in all its movements, and is an easy machine to handle, and does not require the services of a skilled operator, no cutting or pulling of the thread required, and when the buttonhole comes from the machine, it is finished in every respect and does not require to be trimmed or cut. The length of hole required can be obtained by simply turning a screw.

The machine is made of hardened steel drop forgings, thus reducing the breaking and wearing of parts to a minimum. *Samples of work and terms sent on application.*

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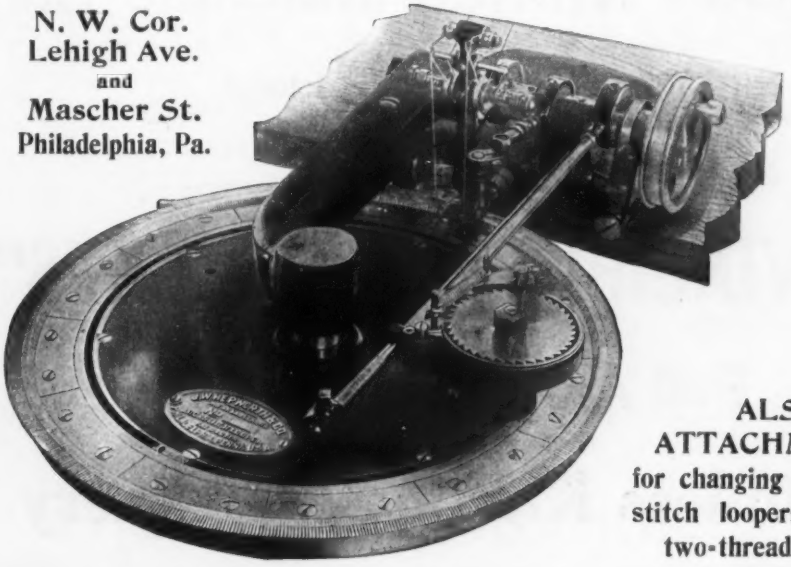

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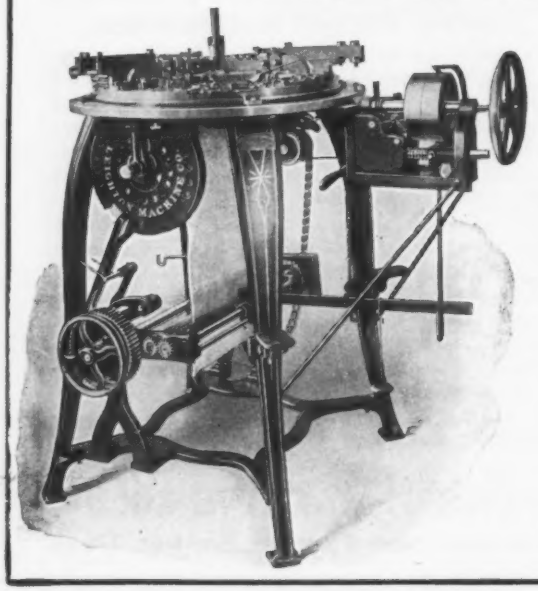
Two Thread Elastic Lock Stitch Loopers

ALSO ATTACHMENTS
for changing our single stitch loopers into the two-thread loopers

THE LEIGHTON KNITTER

HAS EARNED THE REPUTATION OF PRODUCING



Firm, Elastic Garments

USING LOW GRADE STOCK

THESE MACHINES ARE BEING USED FOR

High Grade Goods

MORE AS COMPETITION INCREASES

Real Efficiency

Means Excellent Stitches with ECONOMICAL OPERATION

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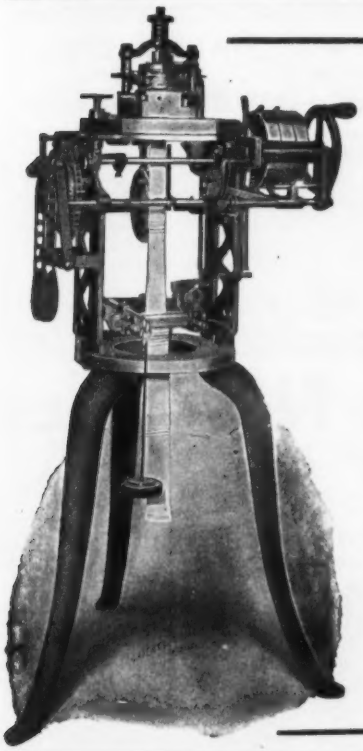
Manufacturers of

"INVINCIBLE" and "JENCKES"

Full Automatic Circular

Seamless Knitting Machinery



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Circular Knitting Machinery

of every kind for every purpose

HOSIERY RIBBERS

with Splicing, Striping, Two-speed, Selvage Welt and French Welt Attachments.

Full Automatic Hosiery Footers

BODY MACHINES, SLEEVERS, etc.

for Underwear, Sweaters, Toques, etc.

NECKTIE MACHINES

for making all kinds of tubular knitted scarfs.
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THE MOST COMPLETE LINE OF

Sweater Coat Machines

Automatic Racking Machines with or without striping attachments.
Herring Bone Stitch Coat Machines.
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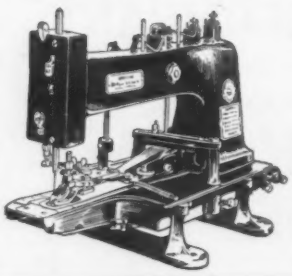

No Bobbins to Wind. Will Sew All Buttons With Any Thread.
No Threads to Trim. Saves 90% of the Needle Breakage.

This machine is operated with but one thread, which enables it to run at higher speed than a two-thread machine, greatly reducing operation and maintenance expenses. It will sew on any size or style of two or four-hole buttons. Its patent thread-breaking device does away with the use of knives, and leaves the buttons neatly finished—no unsightly loose threads.

Send for "List-of-Users" booklet.

Union Button Sewing Co., Dept., Frederick Osann Co.

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HOW MUCH OF THIS $10,000,000.00 DO YOU WANT?

About $10,000,000.00 worth of full fashioned stockings are made in America each year.

No matter what proportion of these millions you are now getting, you can get more of it if you will make full fashioned hosiery on our machines.

Because, the stockings you make will fit perfectly and bring you repeat orders.

The leading hosiery manufacturers are installing these machines.

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THE MAKERS OF AMERICAN FULL FASHIONED HOSIERY MACHINES

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Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

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ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS

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Knitting Machines

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because we make a superior grade of needles

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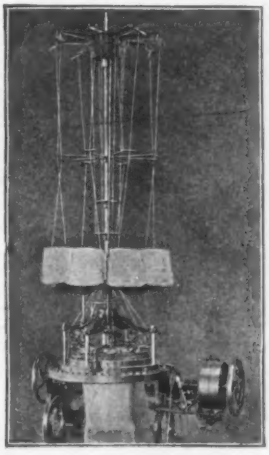

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Certified graduates of High Schools and Academies admitted without examination.

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For Multiple Stitching

Built for all purposes where a number of rows of stitching are required. ¶With either form of stitch, single thread chain, double thread chain, or lock-stitch, sewing material from 1-16 inch thick, up to 1 inch thick, and up to 120 inch wide. ¶Furnished with any required number of needles, spacing to suit requirements. ¶We also build Paper Slitting Machines and design special machinery.

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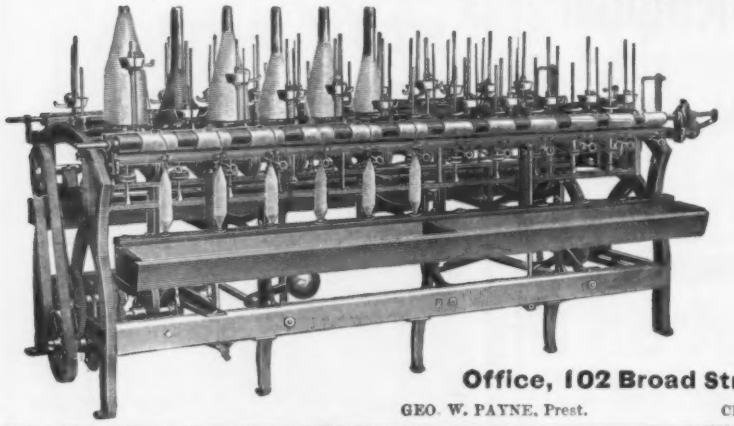
Walpole, Mass., U. S. A.

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers, Wind for Cop, Skein or Bobbin



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Upright Spoolers

To Spool from Cop, Skein or Bobbin

Doubling Spoolers for doubling 2, 3 or more ends into one

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler Guides, Bolsters and Stops Made and Repaired at Short Notice.

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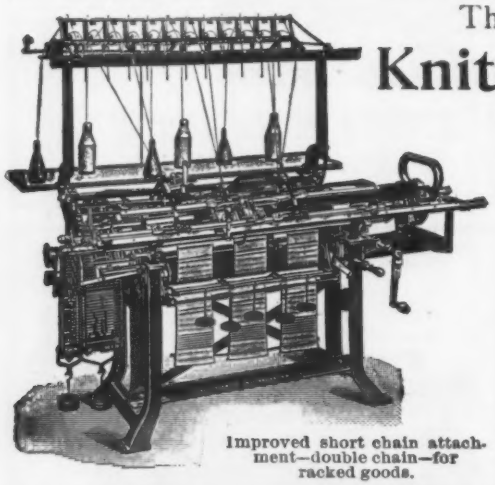

Improved short chain attachment—double chain—for racked goods.

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160,000 Knitting Machines in use all over the Universe

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The cut represents one of our full automatic machines with double chain, short chain attachment, doing away with the long chain and lots of blocks.

Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

For full particulars, needles and supplies for all kinds of knitting machines, write to

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New Jersey Wire Stitcher

Highest Grade

Machine for rapid and Economical Method of Attaching Labels to Hosiery or other Garments.

Uses pointed staples, cannot tear the finest fabric.

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J. L. Shoemaker & Co.
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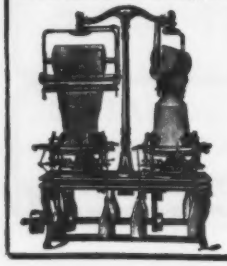
PHILADELPHIA

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:

Cross Question 123. How long have you been a manufacturer of knitting machines? Answer I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.

BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLEY Was born, according to his testimony in the case above cited.

STANDARD "G"

¶ A New Type of Hosiery Machine—being the result of 22 years of actual experience in studying the needs of the trade.

¶ Your investigation desired.

¶ Can be seen running at all times.

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Hosiery and Textile Binder

No. 30

A Simple, Inexpensive Machine for Attaching Tickets on Hosiery, Underwear, etc.

It uses a pointed staple, **CANNOT INJURE THE FINEST SILK HOSE;** can be set aside when not in use.

Is operated by foot power and has a **patented WORK-HOLDING DEVICE carrying one dozen or more pairs of hose, keeping them in perfect alignment and presenting the tops in position to receive the tickets AT LEAST TWENTY-FIVE PER CENT QUICKER** than by any other method now in use.

For particulars and the address of the nearest agency

Apply to the Manufacturers

The Acme Staple Company

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Eureka Fire Hose

Cotton Mills, Woolen Mills, Knitting Mills and Factories need positive protection instantly available. Eureka Hose gives protection.

"Eureka" has the lasting quality and the capacity to resist wear and tear.

Fire Hose for every possible duty.

Eureka Fire Hose Mfg. Co.

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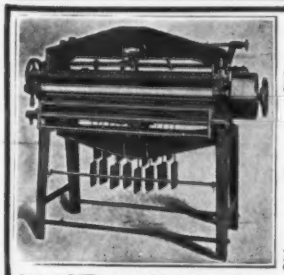

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Better than ever from YOUR standpoint

Several New Features

have been added to the "1912" Cloth Cutting, Folding and Winding Machine which *add at least 50% to its value to YOU.* It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine. It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an *extra* strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to *more and greater profits.*

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Mail a card for complete information and prices. When in need of special machinery write me.

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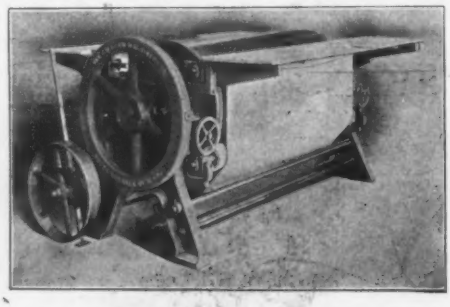

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Capacity and Finish

With two girl operators its record capacity is pressing six hundred dozen garments per day without breaking a button. With only one operator it is three hundred dozen per day.

The appearance of the garment when pressed on it is very attractive; the finish cannot be excelled; many mills say it cannot be equalled by any press or method of pressing.

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This school is located in New Bedford, Mass., a rapidly growing city and already the largest producer of fine cotton goods in this country.

Instruction given in the theory and art of cotton manufacture in all its branches.

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Every instructor a man of broad experience and training.

Fourteenth year. Many graduates filling positions of trust and responsibility. Catalogue sent free on application. Address,

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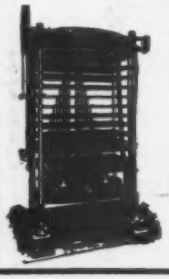

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The most reliable machine of the kind on the market.

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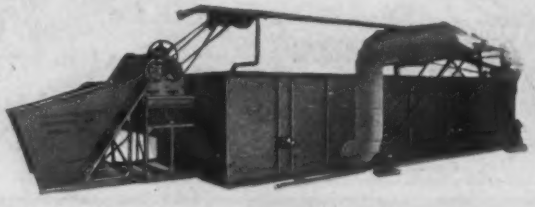

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These dryers give greatest capacity at least cost

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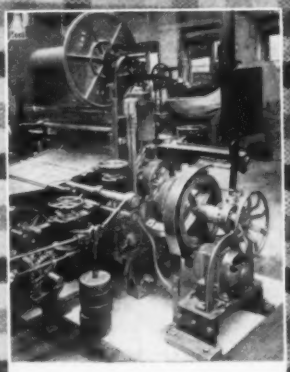

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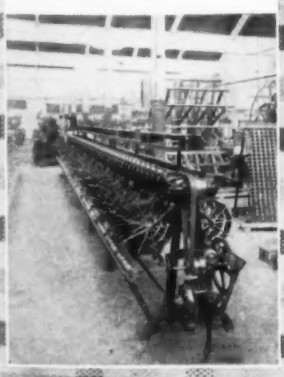

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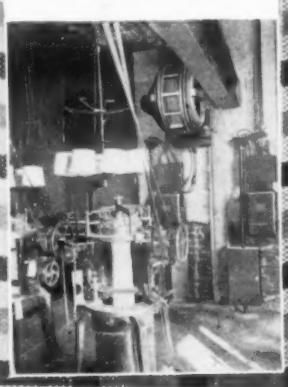

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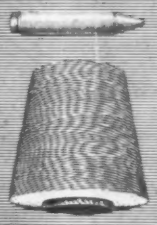

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